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# THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

Economic Status of Isolated Settlers
GEORGE S. WEHRWEIN

The TVA Investigation
D. L. MARLETT

Competition and Mortgage Rates
JOHN H. FAHEY

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Mechanical Cotton Picking and Land Utilization
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British Town and Country Planning
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DEPARTMENTS: The Borders Case—HORACE RUSSELL; Housing Status of Married Students—RICHARD U. RATCLIFF; Land Classification in New York—H. S. TYLER; Tenure Changes on Arkansas Plantations—GLEN T. BARTON and J. G. McNEELY; Two Utility Refund Decisions—FLOYD R. SIMPSON; The People's Gas Case—DAVID S. WALD.

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# Town and Country Planning in Great Britain

*By* LEE S. GREENE*

THE planning of land use in country and city, a recognized feature of community life and public control during many past periods of European history, has left clearly visible traces in the present-day appearance of British cities. The "New Town" of Edinburgh and, at the other end of the island, the city of Bath furnish striking testimony to the energies and restraint of builders of past years. Journeys through the sprawling disorderliness of modern London afford plentiful glimpses of the remains of a tradition of urbane planning and building, where these remnants still struggle against the onslaughts of a hasty age. The English countryside, too, retains its fame only by reason of a character bestowed upon it as a result of deliberately planned care and development.

Today there again emerges a new interest in the possibilities of city and country land-use planning aroused by the realization that developments in modern Britain call increasingly for that type of control. This interest is at least wide enough and strong enough to have had a decided effect upon the course of public policy. Permissive legislation has been available for the development of land-use planning by local authorities in Great Britain since 1909. This legislation has been successively strengthened up to the final passage of the 1932 Act, but even so, in the opinion of many critics, the present range of powers enjoyed by local authorities in England, Wales, and Scotland is insufficient to meet the demands which have arisen. In essence, the case for planning in Great Britain rests on conditions as familiar in the United States as in England or Scotland, although certain special elements exist in the British problem. Throughout Great Britain there exists the familiar tendency for population to flee from the centers of great cities in the hope of establishing homes nearer to the countryside. This process results in a tendency for neighboring cities to coalesce into one large conurbation; such aggregations as the urban areas including and surrounding Liverpool, Manchester, Newcastle-on-Tyne, Glasgow, and London are becoming the rule in Britain.[1]

* Supervisor of Training in Public Administration, Tennessee Valley Authority; and Assistant Professor of Political Science, University of Tennessee.

The writer wishes to thank the Social Science Research Council, under whose fellowship in 1937–8 he was enabled to collect the data for this article.

[1] See *The Future Development of South-West Lancashire*, Report of the South-West Lancashire Joint Town

(*Footnote 1 continued on page 126*)

Smaller aggregations of population repeat the pattern.

At the same time, another type of development has added to the pressure for planning controls. Certain areas of England, Wales, and Scotland, chiefly areas in which heavy industry has flourished, have suffered over a long period of years a steady decline in their major industries, a high degree of permanent, long-time unemployment, and a decline in population, aided in part by a national governmental policy of transfer of surplus workers to more prosperous areas. These depressed areas include the Glasgow industrial region, South Wales, and the Durham and Tyneside regions. To these must be added the Liverpool area and the cotton and coal areas of Lancashire where decline and consequent suffering, although probably less severe than in other localities, are still out of line with conditions in the more prosperous regions of the country. The decline of these depressed areas has been accompanied by a vigorous and disorderly expansion of other areas, especially around London and in portions of the Southeast, and in certain sections of the Midlands. In these regions a constant flow of population to the outer rings of the great cities meets the flow of population from the centers. A host of planning problems there arise, involving housing, traffic control, and the preservation of open spaces and recreational areas.

### *Legislative Background*

Although town and country planning has figured in English local life during the past, town planning as a recognized branch of modern public administration may be said to have begun with the passage of the Housing, Town Planning, etc., Act of 1909.[2] This statute gave powers to the councils of boroughs, urban districts, and rural districts to prepare town planning schemes for any land which was in the course of development or likely to be used for building purposes. By these terms, planning was broadly restricted to suburban areas and, as the act was merely permissive, surprise need not be occasioned by the subsequent limited degree of progress.

In 1919 the functions of the Local Government Board, which had formerly controlled planning, were transferred to the newly created Ministry of Health. The 1909 town planning law was revised to facilitate the use of planning powers, especially in view of the expected emergence of a sizable program for public housing. The new act[3] required the preparation of planning schemes by urban authorities with a population of 20,000 or more before a fixed date and permitted the combination of local authorities into advisory joint town planning committees. Thereafter progress was more rapid.

A Town Planning Act was passed in 1925,[4] without effecting any fundamental changes in the planning system. When the important Local Government Act of 1929[5] was passed, the county councils, which hitherto had not played a significant part in planning, were empowered to act jointly with the local authorities or to act for the local authorities in the preparation or execution of planning schemes.

The final step in the development of planning legislation in Great Britain up

(*Footnote 1 continued from page 125*)

Planning Advisory Committee, 1930, pp. 9 ff.; also unpublished paper, No. 30 A, Ministry of Labour evidence to the Royal Commission on the Distribution of the Industrial Population, 1938.

[2] 9 Edw. 7, c. 44.

[3] The Housing, Town Planning, etc. Act 1919, 9 and 10 Geo. 5, c. 35.

[4] 15 Geo. 5, c. 16.

[5] 19 Geo. 5, c. 17, §§40–43.

to the present was taken in the comprehensive Town and Country Planning Act, passed in 1932.[6] Under this statute, the power of the planning authority was so far extended that any land might be planned providing the Minister of Health could be satisfied that some development or redevelopment of the land concerned was likely to take place, or that amenities required protection. The suburban limitation of the 1909 Act, already less important than formerly, was thus completely abandoned. The obligation to prepare schemes that had been imposed on the larger authorities in 1919, having proved unworkable, was dropped, and a return was made to the system of voluntary initiation of planning schemes by local authorities, although the Minister of Health obtained rather large powers to act in default of progress by local units.

The Town and Country Planning Act has not been amended since 1932, but the system of planning has been modified by the Restriction of Ribbon Development Act passed in 1935. This act purports to control the frontage development on all classified and many other roads.[7]

In addition to the town planning acts as such, the housing legislation of Great Britain has influenced town planning powers and activities. Throughout the post-war period the housing acts have, at various times, permitted housing for purposes of making up a shortage, providing new houses in place of cleared slums, or abating overcrowding. The location of the myriad housing estates which dot England and Scotland has had an effect upon English town plans, although the effect itself has often not been the result of careful planning. In one respect, in particular, housing legislation contains an important feature relating to town planning. Section 13 of the Housing Act of 1935 provided for a new procedure known as "redevelopment" under which extensive slum areas could be cleared, replanned, and redeveloped as a whole. The provision for redevelopment was repeated in the Housing Act of 1936.[8]

Scottish planning is now provided for by the Town and Country Planning (Scotland) Act of 1932,[9] which is, in its essential features, identical with the English act of that year, with some differences in the nature of the local units made responsible for action.

### *The Scope of Planning Control*

Broadly speaking, the concept of town and country planning in England, Wales, and Scotland includes the planning and control of the use of land, such control extending to the structures which may be erected. The objects of planning are stated to be the control of the development of land, the achievement of proper sanitary conditions, amenity, and convenience, the preservation of existing buildings or other objects of architectural, historic, or artistic interest, and of places of natural interest or beauty, and generally the protection of existing rural and urban amenities.[10] Schemes may be prepared for exercising control over land which has already been used for building on condition that public improvements or other developments are likely to take place such as to make the scheme expedient, or on condition that the land comprises buildings of architectural, historic,

[6] For England and Wales, 22 and 23 Geo. 5, c. 48; for Scotland, cf. below, n. 9.

[7] 25 and 26 Geo. 5, c. 47. See also *Report of the National Survey and National Planning Committee*, Town Planning Institute, May, 1938, pp. 1–4; and T. Alwyn Lloyd, *Planning in Town and Country* (London: Routledge, 1935), c. VIII.

[8] *London Housing*, London County Council, May, 1937, pp. 26, 252, 253.

[9] 22 and 23 Geo. 5, c. 49.

[10] Statutes cited (1932), §1.

or artistic interest, or in the event that such land is so situated as to make its inclusion advisable in order to obtain the general objects of the scheme. Although these clauses appear to have a restrictive character, they will in fact cover a very large proportion of the land requiring planning in Great Britain. Moreover, a planning scheme may be extended to land not built upon or not likely to be, in case that land is so situated as to make its inclusion in the scheme expedient because of a neighboring area already developed, or because the land concerned comprises objects or places of interest or beauty.[11] It may be noted that agricultural land as such is not included in the types of land subject to planning control, but much agricultural land can be planned by reason of the provisions permitting the preservation and protection of places of interest or beauty. Clauses of this type are particularly useful in a small country with rich historical background and abundant beauty spots. Few sections of the country fail to fulfill the requirements necessary to bring the land under planning schemes on the grounds of development, redevelopment, or preservation of amenities. Even land outside the regulations here cited can be brought under schemes upon the request of not less than 3/4 of the owners holding not less than 2/3 of the land. This latter provision can be used freely for the preservation of agricultural tracts where the owners consent.

The law governing the establishment of planning schemes envisages control principally through zoning to govern the use of land and buildings. A complete statement of the powers of planning authorities would be outside the scope of this paper, but the essential powers may be described. A planning scheme may include provisions prescribing the space about buildings, limiting the number of buildings, or regulating their size, height, design, and external appearance. Building-line restrictions with relation to the street may be included. Restrictions may be imposed upon the manner in which buildings may be used.[12] Schemes must contain provisions dealing, among other matters, with streets and roads, open spaces, the reservation of sites for religious worship, problems of waste disposal, and lighting and water supply.[13] In connection with the preservation of amenity the planning authority may require the preservation of single trees or groups of trees and the replanting of woodlands in accordance with good forestry practice. Control of forestry operations, however, is not permitted.[14] A planning scheme may specify that certain areas are set aside as areas in which protection is afforded against advertisements and in those areas an advertisement which is seriously injurious to amenity may be removed by order of the planning authority. In these areas the display of other advertisements may be made subject to conditions in respect of position, manner, or period of display.[15] With respect to the preservation of structures of noteworthy artistic or historic interest, especial protection is afforded by the provision that a planning authority, after the adoption of a resolution to plan or after the adoption of a plan, may at any time prevent the

[11] Statutes cited (1932), §6.
[12] Statutes cited (1932), §12.
[13] *Ibid.*, Second Schedule.
[14] Statute cited (England, 1932), §46.
[15] Statute cited (England, 1932), §47. Important restrictions surround the exercise of these powers. In particular, the planning authority cannot prohibit entirely the display of advertisements related solely to activities carried on upon or in relation to the land on which the advertisements are displayed, although such advertisements can be controlled as to size, position, and manner of display.

demolition of such structures, providing the Minister of Health approves.[16]

The powers of the planning authority include the power to remove, demolish, or alter existing buildings or other existing works which do not conform to the provisions of schemes. The same power extends to buildings or works erected or carried out without compliance with the scheme. The planning authority may prohibit non-conforming use of land. It may also execute any work in default of action by any other agent where delay has occurred to the prejudice of the efficient operation of the scheme.[17]

*Administrative Structure*

The size of the authorities responsible for the initiation and execution of planning schemes and their position in the governmental structure are of utmost importance. In England and Wales, the authorities so responsible are the common council of the ancient City of London, the London County Council, the councils of the county boroughs, and the councils of the municipal boroughs, the urban districts, and the rural districts.[18] These authorities are the primary local authorities of England and Wales, the smallest units of any genuine governmental importance. In effect, what is said here is that each urban and rural basic unit in the country is the planning authority for its area. It is worth noting that these authorities are likewise the basic units for local property taxation, or, in English terms, the rating authorities. However, county districts, that is, municipal boroughs, urban districts, and rural districts, may delegate their planning powers to the administrative county councils as a result of agreement between the district and county councils. To the extent that this is done, planning may be placed upon a county-wide basis, but cities that enjoy the status of county boroughs are, for all purposes, including planning, outside the control of the administrative counties. The individual basic units for planning, here described, are probably too small to permit the best use of planning powers. To overcome this defect, the law provides that joint committees, representative of two or more authorities, may be formed for the preparation or adoption of planning schemes, but it is significant that such committees may not borrow money or levy rates.[19] The enforcement of a scheme adopted may be entrusted once to an urban or rural district, to a municipal or county borough, to a county council, or to a joint body provided by the scheme.[20]

The Scottish act provides that the primary authorities for the preparation and adoption of schemes are the town councils of the large burghs and the county councils, or the joint councils of combined counties. Basically, therefore, the primary planning unit of Scotland is larger than the unit in England and Wales, although in Scotland the Department of Health may transfer planning powers to the council of a small burgh if it sees fit.[21] As in England, joint committees may be formed for the preparation or adoption of schemes and special joint bodies may be constituted the responsible administering agents.[22]

*Creating a Plan.* In Great Britain the administrative process whereby a plan is brought into being begins with a resolution to plan, covering a specified territory, taken by one of the governmental

[16] Statutes cited (1932), §17.
[17] *Ibid.*, §13.
[18] Statute cited (1932), §2; H. Chapman, *Town and Regional Development* (London: J. M. Dent & Co. 1933), p. 10.
[19] Statute cited (1932), §3.
[20] *Ibid.*, §11.
[21] Statute cited (1932), §2.
[22] *Ibid.*, §§3, 11.

bodies, designated as planning authorities. When the resolution to plan is passed, the Ministry of Health in London or the Department of Health in Edinburgh issues an interim development order under which the planning authority is given a degree of control over the area of the planning scheme during the interim between the date when the resolution to plan takes effect and the final coming into operation of the scheme as eventually made. This control is exercised principally by the device of requiring that property owners obtain the permission of the planning authority before undertaking any construction activity within the area covered by the interim order or forego compensation in case any results of such activity are later found to be contrary to the completed scheme and to require alteration in accordance with the final plan.[23] The planning authority's power, therefore, does not await the final adoption of a full-fledged plan. After the resolution to plan, the scheme is put into active preparation by a committee representative of the council or the joint authority previously described. When the scheme is prepared, it must be passed by the governing bodies of the local units concerned or by the joint committee representing several authorities, and must receive the approval of the Minister of Health in England or the Department of Health in Scotland, as the case may be. An approved scheme must be laid before both houses of Parliament, thereafter to come into operation unless within 21 days either house resolves against it, in which case the Minister must alter the scheme sufficiently to gain parliamentary approval.[24] Rarely is a given planning unit covered by one scheme. Rather, given sections of the unit are planned in successive order, this administrative device being used to speed the process.

*Role of the Central Government.* The powers of the central government, either of Scotland or England and Wales, over the planning process are very considerable and are exercised by the appropriate minister of health in both sections of the country. The Minister's approval is necessary before a resolution to plan can become effective or before a finished scheme can come into operation. The Minister enjoys the power to alter representation on a joint committee by adding to it the representatives of other authorities. He may order the formation of a joint committee, at the request of one or more authorities concerned. He may vary a scheme, upon application of any authority or joint committee which he considers has an interest, providing he is satisfied that additional expense will not be placed upon an objecting authority. The Minister also has some default powers, if he chooses to exercise them. He may, for example, order the preparation of a scheme, this order having the same effect as a resolution to plan. He may follow this up by preparing a plan himself if the local authority fails to do so, or, in some cases, he may empower the county council to act. He may force a local authority to adopt, or he may adopt for it, a scheme proposed by local owners. The Minister may enforce a scheme in default of a local authority, or may compel enforcement by the authority, or empower the county council, in some cases, to enforce schemes.[25] In general, these powers of the central government are exercised only after appropriate public hearings.

The system of national control of local planning has evidenced the faults cus-

[23] Statutes cited (1932), §§6, 10; Chapman, *op. cit.*, p. 44.

[24] Statutes cited (1932), First Schedule.

[25] Statutes cited (1932), *passim.*

tomary in a system dependent upon local initiative, fostered and guided by central administrative review. In many instances the central government departments of Great Britain are traditionally reluctant to force the pace where local units are concerned. It would appear that planning is treated in this fashion. The Ministry of Health in England (and the Department of Health in Scotland) actively advises local units on planning questions, but, on the other hand, the Minister does not exercise the extensive default powers which he possesses.[26] Individual instances of the use of the Ministry's power to force urban districts into joint planning committees can be noted.[27] Probably persuasion is used more often than compulsion to gain this end.

The Ministry is hampered in its ability to coordinate individual local schemes so that they may be fitted into something resembling a national plan because one scheme cannot as a matter of practice be held up until neighboring schemes are ready for submission.[28] Neither the Ministry nor any other agency has attempted the development of a comprehensive key plan on a national scale. Planning is therefore done on a local basis exclusively.[29] One result of this method is to zone too much land in most localities both for industrial and residential development, allowing so much actual freedom in the choice of location that development continues to be scattered.[30]

The Minister's functions are made up of a combination of administrative and judicial powers. He advises on the preparation of plans, but he is also the official to whom aggrieved citizens appeal. Thus he combines in himself two functions which ought, organically, to be separated. The solution of this difficulty could be found only in the establishment of two bodies, one to administer, the other to adjudicate. Such a suggestion is strongly advocated by the Town Planning Institute and is unquestionably in accord with sound governmental practice.[31]

*Protection of Private Interests.* The interests of private individuals are safeguarded in numerous ways in the acts, which provide remedies through both judicial and administrative channels. Appeals on many points lie to the Minister by private individuals aggrieved by a planning authority's decisions. Disputes may be settled in many cases by arbitration, or by direct appeal to the courts.[32] In particular, two general types of restriction may lead to appeal to the appropriate organ. The restrictions upon private owners under the interim development order may lead to one type of appeal. Another may arise out of the provision of planning law which requires the gradual opening of land set aside for future building development in a planning scheme to building operation by general development orders. The desirability of such general development orders must be considered by the local authority every three years after the

[26] 24 *Journal of the Town Planning Institute* 435–6 (October, 1938), review of *Report on the Preservation of the Countryside*, 1938, by Town and Country Planning Advisory Committee.

[27] For example, *Annual Report of the Ministry of Health*, 1932-3, Cmd. 4372, p. 136.

[28] Royal Commission, *op. cit.*, Evidence of Sir John Maude, October 5, 1937, pp. 16-8.

[29] The charge has been made that much of the failure to achieve better results is caused by the inertia of the Whitehall bureaucracy; cf. C. B. Purdom, "Town Planning and Industry," 85 *The Architect's Journal* 863 (May 20, 1937).

[30] The area around Oxford is planned for 800,000 people; cf. *Town and Country Planning*, March, 1937, p. 66; also Purdom, *op. cit.*, p. 863; W. G. Holford and W. A. Eden, *The Future of Merseyside* (Liverpool: University Press of Liverpool, 1937), p. 67.

[31] *National Survey*, *op. cit.*, pp. 19 ff.

[32] Statutes cited (1932): England, §39; Scotland, §§38, 39; *passim.*

scheme comes into operation and, upon appeal by private persons, the Minister may himself make such general development order in default of local authority action.[33]

Some of the most impressive town planning in England has been done by the garden cities. These are of two types: those owned by private corporations, comprising Welwyn Garden City and Letchworth, and those supported by large municipalities. The most outstanding example of this latter class is the great suburb of Wythenshawe being developed by Manchester. It is generally felt by the proponents of the garden city idea that sufficient advance cannot be made by the use of private capital and that governmental agencies must build garden cities. The 1932 Town and Country Planning Act repeated provisions that had been in the statutes since 1919, enabling any local authority acting singly or jointly with other authorities to acquire land for the development or extension of a garden city.[34]

### *Planning Progress*

Up to the passage of the 1932 Act, actual progress in the development of planning schemes was lamentably slow; the country is now suffering acutely at many points because of the failure to develop both legislation and administration more rapidly. By 1919 resolutions to prepare schemes had been passed by about 100 local authorities to cover a total area of about 300,000 acres.[35] By 1929, the area covered by resolution to plan amounted to 4,600,000 acres.[36] But up to this time it had proved difficult to push the process beyond the resolution stage, as the preparation of the actual schemes was most laborious. Since 1933, however, when the 1932 Act became effective, planning has advanced with unwonted speed. On December 31, 1937, planning resolutions covered about 24,000,000 acres of England and Wales, or 2/3 of their land surface. About 1,134 local authorities, or 3/4 of the total number, were concerned in the preparation of schemes. Again, progress shown in the final completion of schemes is disappointing, since at the end of December, 1937, only 237,500 acres had been covered with finally approved schemes; this area is actually smaller than the area covered by resolutions to plan in 1919. However, the number of locally accepted final schemes now before the Minister for his approval indicates the possibility of a more rapid progress toward final application of schemes in the near future.[37] Planning in Scotland has been much slower. At the end of 1937 resolutions to plan covered 488,111 acres and finally approved schemes covered an additional 89,410 acres. This total area is only 3% of the area of Scotland and relates primarily to the industrial belt between Glasgow and Edinburgh.[38] Practically all the area in England and Wales is covered by planning in some stage, with the general exception of North and Middle Wales and extensive portions of the Northeast. It is fairly evident that the principal industrial areas have been drawn within the scope of planning.[39]

### *The Planning Unit*

That satisfactory planning requires larger units than can be furnished by

[33] Statutes cited (1932), §15.

[34] *Garden Cities and Satellite Towns*, Report of Departmental Committee, Ministry of Health, 1935, pp. 19–20; Statutes cited (1932): England, §35; Scotland, §34.

[35] *National Survey, op. cit.*, p. 1.

[36] *Ibid.*, p. 2.

[37] *Ibid.*, pp. 4–5.

[38] *Ninth Annual Report of the Department of Health for Scotland*, 1937, Cmd. 5713, p. 38.

[39] Interview with G. L. Pepler, Ministry of Health, June 17, 1938.

local authorities is a point of view apparently gaining wider acceptance. Formerly, as a general rule, joint action was confined to advisory joint committees who prepared rather general reports. The current trend indicates a growing preference for the appointment of "executive" joint committees, representing two or more local authorities and definitely charged with the function of preparing actual plans. The number of such executive joint committees in England and Wales has reached 133, most of them including county councils as members. The committees are responsible for schemes covering 2/3 of the total acreage under planning. There exists a tendency also to make these joint committees responsible for the administration of the plans after they have been prepared. A further indication of this general trend may be seen in the fact that some 60 local authorities have surrendered a part or all of their planning powers to the county councils concerned.[40]

Nevertheless, there are many indications that present planning units are most inadequate. A recent study of planning conditions in the neighborhood of Liverpool indicates clearly that adequate planning, particularly in the matter of preservation of open spaces, has proved impossible because the natural economic area has been split up among a number of local governmental units which have not been able to cooperate satisfactorily. Each local government unit feels it necessary to expand its ratable or taxable value, and hence is impelled to permit building at the expense of its open space. The recreational needs of neighboring populations are bound, under these circumstances, to be disregarded. A planning unit which is not at the same time a rating unit is faced with an inner conflict. The planning unit should be the rating unit (that is, the unit collecting local property taxes),[41] but, in turn, the rating unit must itself be large enough to comprise all the population of the local economic unit, if the business and recreational needs of this total population are to be clearly foreseen and adequately provided for.

*Metropolitan Planning Problems*

The planning of the London region is one of the most pressing problems faced by English statesmen. This metropolitan area becomes increasingly unwieldy as it continues to grow at the expense of the remainder of the country. Proposals have been made to forbid the further growth of the metropolis.[42] Its increasing size is occasioning the concern of the Royal Commission on the Distribution of the Industrial Population. Plans are now going forward with considerable rapidity for the establishment of a Green Belt around the inner portions of the London region, this belt to consist of a ring of parks and private open spaces, from one to five miles wide at a distance of 16 miles from the center of the city. The London County Council by subsidizing neighboring councils is securing the purchase of appropriate lands. About 70 square miles of land of a projected total of 100 square miles or more have already been set aside.[43] It is well understood, however, that building will continue freely beyond the Green Belt, which at best must continue to be only a partial relief from congestion.

[40] *Annual Report of the Ministry of Health* (England and Wales), 1936–7, p. 130; interview with G. L. Pepler, June 17, 1938.

[41] W. G. Holford and W. A. Eden, *op. cit.*

[42] *Third Report of the Commissioner for the Special Areas (England and Wales)*, 1936, Cmd. 5303, pp. 7–9.

[43] Minutes, Royal Commission on the Distribution of the Industrial Population, Evidence of the London County Council, Feb. 16, 1938, pp. 394, 395.

The planning of the London region suffers from lack of unified control. The Greater London Regional Planning Committee, after having made two reports, disbanded and its place has been taken by a Standing Conference which has only limited consultative powers.[44] London is in no sense a unit. The Greater London area, composed of the ancient City of London and the Metropolitan Police District, covers a territory of 693 square miles. In this area there are 100 local authorities. The City of London constitutes one planning authority, the London County Council another; the remainder of the Greater London area is divided for planning purposes among further local authorities acting singly or, in some sections, jointly. Outside the Greater London area are more planning authorities whose activity or sloth will inevitably affect conditions in the Greater London area itself. The Standing Conference already includes representatives of over 100 authorities. The difficulty of achieving coordination under these circumstances requires no emphasis.

The problems characteristic of the London area are present in other great metropolitan regions. The Green Belt idea has been discussed with reference to other regions and attempts are being made to establish such a belt around Birmingham. The idea of limitation of the size of cities has nowhere supplanted, however, the customary ideal of continuous municipal progress in the form of physical growth.

### *Compensation and Betterment*

It is fair to say that one of the greatest obstacles to successful control of city and country development in Great Britain has been the failure to solve the complicated issues surrounding compensation and betterment. Planning, if properly done, should not destroy values but enhance them. The shift in the incidence of values occasioned by planning should be met by compensation to those injured at the expense of those benefited. But, as might be expected, the losses experienced by private individuals can be recovered from the governmental unit with comparative ease, whereas the unit experiences great difficulty in establishing claims to payment from a private property holder because of betterment resulting to his property from a planning scheme.

The statute itself is very tender in its regard for private property. Normally, compensation is payable immediately after the plan becomes effective, but payment for betterment is collectible only when the betterment is realized by the owner through a disposition of the property or a change of use within a period of 14 years after the plan becomes effective. If betterment can be shown, only 75% of the assessed benefit can be collected.[45] The Minister of Health, in approving the scheme, may exclude all claims to compensation as far as certain parts of a scheme are concerned, such as those necessary to protect public health, restricting uses of buildings, regulating height, size, design, and external appearance of buildings, or limiting the number of roads entering a principal highway.[46] These provisions, however, still leave the planning authority open to heavy compensation claims, particularly where attempts are made to preserve as open spaces or for agricultural use areas which develop building-land value.[47] The plan-

[44] *Annual Report of the Ministry of Health*, 1936-7, p. 130.

[45] Statutes cited (1932), §21; *National Survey*, *op. cit.*, p. 18.

[46] Statutes cited (1932), §19.

[47] Sir Gwilym Gibbon, *Problems of Town and Country Planning* (London: G. Allen, 1937), p. 21.

ning authority may be permitted by the Minister to deny payment of compensation for restrictions on building where such restrictions are necessary to protect public health or to avoid excessive public expenditure, but this safeguard is not sufficient to bar building development over considerable sections of land which might be better preserved as open space. It is true that the 1932 Act permitted the temporary restriction, without compensation, of premature development until the issuance of orders permitting development after steps had been taken to plan, but this provision has apparently not been effectively used to prevent sporadic building without planned grouping.

The compensation and betterment structure as it now exists impels authorities to limit planning to provisions such as will not run compensation risks or to schemes for which the voluntary consent of owners can be obtained.[48] The handicap of compensation is felt particularly when an attempt is made to preserve open space, although often something can be done by agreement with large landholders.[49]

### *Conclusion*

Enough has been said to indicate that city and country planning in Great Britain is at present primarily a negative type of control, not dynamic development. Such development can be found in projects such as public housing, the clearance areas set out in various cities, the garden cities, and the industrial estates established by the Special Areas Commissioners. In too many cases these movements, which ought to be portions of a general scheme of planning, are viewed as isolated developments. Public housing in Great Britain has been a stupendous activity, but it has not been part of a general scheme of replanned urban communities. In fact, some of the housing may actually have made urban life more difficult because of improper location of the estates.[50] The wholesale clearance of certain slum areas is also impressive and gives hope for improved street and site planning in several large areas. The Bethnal Green area in London covering some 46 acres and the clearance and redevelopment scheme in Liverpool covering 61 acres are especially interesting, but redevelopment projects of this type are too limited in number to contribute greatly to a satisfactory solution of the total planning problem. Moreover, such schemes can ripen only very slowly.

The garden cities afford an illustration of the attempt to plan a community from the ground up, preserving appropriate places for residence and industry and limiting the growth of the city so as to preserve access to the countryside. The experiment has indicated the significance which must be attached to the ownership of land. Planning has been difficult in Great Britain because of the limitations imposed by the necessity of compensation; where the planner is also the owner, the process is much easier. Up to the present, Welwyn Garden City and Letchworth have maintained a good record for planned development because the ownership of

[48] *National Survey, op. cit.*, p. 18; cf. *Annual Report of the Ministry of Health*, 1934–5, Cmd. 4978, pp. 172, 173; Royal Commission, *op. cit.*, Evidence of Maude, Oct. 6, 1937, p. 46.

[49] The method of agreement with owners was recently found useful in the development of schemes for preserving Sussex downs (*Daily Telegraph and Morning Post*, Feb. 25, 1938).

[50] *Garden Cities and Satellite Towns, op. cit.*, p. 6. In most cities it has been necessary to plan the location of public housing estates prior to the preparation of adequate general city plans. For example, see Simon and Inman, *The Rebuilding of Manchester* (London: Longmans, Green, and Co., 1935), p. 82; see also Holford and Eden, *op. cit.*, p. 69.

the land was concentrated in the planning corporation. There exists a tendency at present caused by financial demands in Welwyn Garden City to abandon certain of the objectives of the early planning of the city, notably the full preservation of the surrounding agricultural belt. Consequently, by many it is felt that some governmental sanction should be given to the Welwyn plan.

Nevertheless, the great lesson of the garden cities may be deemed to be the importance of public ownership of land in the planning process. American county zoning should certainly substantiate that point. The garden city experiment is difficult to duplicate with private funds, but powers are now available for the establishment of such cities by local governmental units. Such a city is in the process of formation and well advanced at Wythenshawe, owned and developed by Manchester. A similar development is planned at Kincorth by the corporation of Aberdeen. Liverpool has developed a partially independent satellite at Speke.[51] On the whole, however, the planning possibilities latent in the development of satellite towns where land is owned by local units have not attracted those units in spite of repeated recommendations by planning advisors.[52] The central government has often evinced a short-sighted conservatism in regard to Wythenshawe which would seem to symbolize certain of the worst features of the English character, although representatives of the Ministry of Health have expressed the conviction that comprehensive and coordinated planning on a national scale would require a large degree of public ownership of land.[53]

Many of those who are dissatisfied with the results of planning in Britain advocate a national plan. Some feel that local authorities could be induced to follow a national scheme, but the evidence to date appears to support the position taken by the chief administrators of the Ministry of Health that a national scheme would call for the expenditure of national funds and a high degree of drive from the central administrative organs independently of local control.[54]

[51] Royal Commission, *op. cit.*, Evidence of Maude, Oct. 6, 1937, p. 40.

[52] See, for example, *The Future Development of South-West Lancashire*, *op. cit.*, pp. 46 ff.

[53] *Garden Cities and Satellite Towns*, *op. cit.*, p. 20; Simon and Inman, *op. cit.*, p. 41; Royal Commission, *op. cit.*, Evidence of Maude, Oct. 6, 1937, p. 42.

[54] Maude, *op. cit.*, p. 42.

# The Federal Communications Commission's Rate-of-Return Studies

*By* BARCLAY J. SICKLER*

THE Special Investigation of the American Telephone and Telegraph Company by the Federal Communications Commission took from two to three years to complete, and cost the Federal Government $1,500,000. Out of these funds, $150,000 were allotted to the Telephone Rate and Research Department, which existed during 1937 and the first half of 1938 under the direction of Carl I. Wheat. The work of this department is represented by a series of reports which were issued between May, 1937 and June, 1938.[1] The purpose of these reports was not merely to elicit facts regarding the rate structure and other aspects of the interstate toll service rendered by the Bell System, but also to lay the groundwork for continued and effective regulation of interstate toll rates. The other Investigation reports furnish many basic facts upon which effective regulation must proceed, but they were apparently pointed not so much toward the immediate and practical problems of rate regulation as toward the compilation of a complete record of all activities of the Bell System. The work of the Telephone Rate and Research Department of the Investigation was intended to bring all these facts into their proper place in the immediate problem of "what to do about long-distance telephone rates."

Except for the brief span of this Department's life, interstate toll rates have almost completely escaped regulation. Both the Interstate Commerce Commission, during the period of its jurisdiction over telephone companies, and the Federal Communications Commission in its regular functioning were unable, primarily because of lack of adequate appropriations, to do much more than serve as filing agencies for the toll-rate schedules which the American Telephone and Telegraph Company desired to make effective.[2]

Part of the activities of the Telephone Rate and Research Department consisted of an intensive investigation of the problems of determining "rate of return." The purpose of the present article is to describe briefly the character of these studies, and the import of their conclusions.

One phase of the rate-of-return investigation made by the Department is covered in a report entitled "Factors Underlying the 'Rate of Return' in Public Utility Regulation, as Disclosed in Court and Commission Decisions," is-

* Chief Statistician, Public Service Commission of Wisconsin.

[1] These reports covered such subjects as the Bell System's toll rate structure and practices, reviews of current operating results of the Long Lines Department and the Bell System analysis of "License Contract" servicing relationships, current reproduction cost of Long Lines plant, prices and price trends of Western Electric Company, intercompany rentals, fundamental legal problems, stimulation of toll business from rate reductions, and rate-of-return problems.

[2] See Carl I. Wheat, "The Regulation of Interstate Telephone Rates," 51 *Harvard Law Review* 846 (1938), which was reprinted as Senate Doc. No. 176, 75th Congress; also radio address by Frank R. McNinch, Chairman, Federal Communications Commission, over Mutual Broadcasting System, February 10, 1939 (released in mimeographed form), from which the following is quoted: "The effect of the import of this broadcasting work upon the Commission has been, and would in any Commission unless provision was made against it, to cause measurable neglect of the regulation of the telephone and telegraph industries. Here is a virgin field; so little has been done. Yet the public is so intimately and importantly affected by the quality of service and the charges made for this service by these industries that they should not longer go without aggressive, intelligent, fair regulation."

sued in June, 1938. This report enumerates and analyzes the factors which have been considered and discussed by courts and commissions as fundamentals underlying the solution of the rate-of-return problem. The report summarizes the judicially recognized principles governing the problem as follows:[3]

1. A proper rate of return (percentage) or return (compensation) is a flexible concept and not a static rule.
2. What return is proper necessitates the exercise of "enlightened judgment" in each case.
3. Current conditions are controlling, and general conditions affecting all business should be considered.
4. The return should be sufficient to assure confidence in the financial soundness of the utility, to maintain its credit, and to attract the required capital.
5. The propriety of the allowed return depends largely upon the circumstances, locality, and risk of the utility enterprise.
6. The return should be equal to that generally being made at the same time and in the general region on investments in other enterprises which have corresponding risks.
7. The historical cost of money to the utility and the current cost of money should be considered.
8. A utility's corporate structure, financial history, and past operations should be considered.
9. The return should accomplish, among other things, due recognition of efficiency or lack of efficiency in management.
10. The future prospects of the utility, its taxes and development, the potential stimulation from reduced rates, and the character of the service should be considered.

The following observation is made in the preface to the report:

"Indeed, little apparent attempt has been made by courts and commissions to weigh the relative importance of the factors which they have thus discussed, through the use of objective, statistical evidence, scientifically accumulated. There is an obvious need for such factual data in order to render possible the 'enlightened judgment' mentioned by the courts as necessary in the determination of what constitutes just compensation to public utilities."[4]

A second report by the Telephone Rate Research Department on the rate-of-return problem[6] concerned its economic and financial aspects, with the immediate purpose of determining the

[3] Report on Factors Underlying the "Rate of Return" in Public Utility Regulation, as Disclosed in Court and Commission Decisions, Telephone Rate and Research Department (Special Investigation), Federal Communications Commission, June, 1938, p. VI.

[4] *Ibid.*, p. VIII. But there have been a few cases in which the return problem has been approached from the objective point of view by the use of cost-of-capital data. See, for example, brief of counsel for the city of Chicago in *Lindheimer v. Ill. Bell Tel. Co.*, 292 U.S. 151, 3 P.U.R. (N.S.) 337, No. 440, 1933 Term (Brief and Arguments for Appellants); brief of counsel for the complainant in *City of Los Angeles v. So. Calif. Tel. Co.* (Railroad Commission of California, Docket No. 3800 (1936), 14 P.U.R. (N.S.) 252), and exhibit and testimony of witness Walter J. Herrman; exhibits and testimony by staff of the Wisconsin Public Service Commission in *Re Wis. Tel. Co.*, Docket 2U35 (1936), 13 P.U.R. (N.S.) 224; and exhibits and testimony by Commission's staff in *Ill. Commerce Com. v. Commonwealth Edison Co.*, 15 P.U.R. (N.S.) 404 (1936).

The failure of commissions to use the cost-of-capital approach to this problem may be attributed to several factors, among which are the difficulties until recent years of obtaining the necessary information to determine costs of capital, the checkered financial careers of many utility companies, the lack of relationship between legal rate-bases and the capitalization of the companies, and the limited appropriations and staffs of many commissions, coupled with the expensive regulatory methods demanded by judicial theories of "fair value." It is probably true, also, that many commissions have considered objective data relating to rate of return to a greater extent than the formal case records and decisions indicate, for legal requirements have not necessitated the introduction into the record of elaborate evidence on this factor.

[6] This report was entitled "The Problem of the 'Rate of Return' in Public Utility Regulation, with Special Reference to the Long Lines Department of the American Telephone and Telegraph Company." Those in immediate charge of the study were Walter J. Herrman, investment analyst of Los Angeles, J. R. Foster, Economist for the New Jersey Board of Public Utility Commissioners and Professor of Public Utilities at New York University, and the present writer.

properly allowable return for the Long Lines Department of the American Telephone and Telegraph Company. This investigation proceeded upon the basis that the traditional intuitive methods of determining rates of return by regulatory bodies were inadequate, and that the return allowance should be based upon definite, objective data. Such data should be related to the financial needs of the utility under investigation, since the return allowed should be sufficient to permit the particular utility to raise the capital required in its operations, and should not exceed this requirement. This approach was stated in Chapter I of the report in the following words:

"Such study, it was determined, should proceed from the point of view of establishing and analyzing the factors affecting the amount of return *needed* by a particular public utility, rather than the development of the return which it might merely be *entitled* to earn. No conflict should exist between these points of view,—indeed, a public utility appears to be 'entitled' to earn only the return it 'needs' in order to maintain its credit position."[6]

The characteristics of typical commission determinations of rates of return were briefly analyzed, and may be summarized by the following quotation:

"It is noteworthy that, during the period mentioned (1926 to 1937, inclusive), the typical specific allowance has declined from 7 or 8 to about 6 per cent, but that there has been a quite general lack of any fine adjustment in fixing such specific rates of return, the customary allowance being ordinarily a conventional rate, expressed in round numbers. Since the selection of any specific rate of return has seldom been supported in the decisions by objective analyses of the credit of the particular public utility under consideration, or of the state of the money market in general, it seems reasonable to conclude that the specific rate of return has usually been selected in what may justly be termed an 'arbitrary' manner."[7]

[6] *Ibid.*, p. 5.
[7] *Ibid.*, p. 7.

The introductory chapter of the report summarizes briefly the contents of the remaining chapters, and it appears that no better plan could be adopted in this article than to quote this summary under each chapter title, and then go on to such further discussion of the chapter as appears desirable.

*Economic Analysis of the Rate of Return*

"Consideration of the return problem in this report begins with an 'Economic Analysis of the Rate of Return' (Chapter II), in which the economic costs which should be covered in the return allowance, and which should therefore constitute the measure of such allowance, are considered. Such costs are termed the 'costs of capital,' and the significance of these costs, together with the validity of various methods of their measurement, is discussed. Certain situations in which the actual costs of capital experienced by particular corporations are apparently not entitled to full consideration in the return allowance are also analyzed, and finally, the conditions necessary, in the long run, for a reduction in capital costs are discussed, the suggestion being made that the interests of the consuming public might well be served if 'equalization' reserves were established to even out the fluctuations in corporate income, and, by providing greater security to investors, ultimately serve to reduce the costs of securing capital."[8]

This chapter advances the thesis that, where it is desired to maintain the credit of the public utility under consideration, the return determination must be based on the costs of capital.

"The reasonable return, therefore, is fundamentally that return which will enable the utility to establish a credit position such as will induce a continual and adequate supply of capital to enter the business, as and when required to finance necessary extensions and improvements. The sum necessary to insure confidence in the financial soundness of the utility and to maintain its credit is represented by the reasonable 'cost of capital.' "[9]

[8] *Ibid.*, p. 9.
[9] *Ibid.*, p. 20.

Costs of capital include debt charges, preferred dividends, necessary dividends on common stock to induce continued investment, and reasonable surplus additions.

The report recognizes, however, that in some situations costs of capital lose their significance; that is, maintenance of the ability to raise additional capital is not always a desirable objective. For example, the maintenance of credit in periods of economic depression may be unnecessary or impossible. For particular corporations, where "unreasonable" capital costs exist for various reasons, such as overcapitalization or dishonest financing, the maintenance of good credit may not be possible or not worth its cost. For this latter class of corporations it is suggested that the rate of return might be fixed by reference to the costs of capital that would have existed if the corporation had been soundly capitalized.

Consideration is also given in this chapter to the problems involved in return determination for companies serving a static or declining market, and for those rendering profitable services in certain areas or departments, but also providing services in other areas or departments which are unable to earn sufficient amounts to cover their share of the capital costs. Considerable discussion is also given to the "rate equalization reserve" as a stabilizer of return, with consequent reduction in capital costs.

The discussion of Additional Rewards to Management in this chapter brings up the question of whether the rate of return is the proper place to provide for the rewarding of efficient management. Efficiency under the modern form of corporate enterprise is ordinarily attributable to activities of the management, rather than to efforts of the security holders. Under such conditions it may well be questioned whether an additional return to the common stockholders is the most effective method of stimulating efficiency.

### *Objective Measurement of Return Requirements*

"Under the heading 'Objective Measurement of Return Requirements' (Chapter III), the pertinent factors bearing upon the return allowance are discussed, particularly with respect to the objective, quantitative measurements which must be at hand if 'enlightened judgment' respecting the proper return allowance is to be rendered possible. Attention is also given in this chapter to the factors to be measured in instances, such as that represented by the Long Lines Department of American Telephone and Telegraph Company, in which the servicing entities whose rates are to be regulated have no separate corporate structure or financing of their own. Brief mention is also made of certain data which are frequently presented in rate cases as bearing upon the rate of return problem, but which appear to be inadequate or misleading measures for this purpose."[10]

The report lists the following data which appear to be essential for exercising "informed judgment" upon the rate-of-return problem:

1. The financial history of the company, and the relationship of its capitalization to the prudent investment in the property.
2. The historical (actually experienced) costs of debt and preferred-stock capital, as shown by the company's records.
3. The current market yields on the outstanding securities of the company.
4. Studies of costs of financing by means of various classes of securities.
5. The general financial market situation at the time of the proceeding.
6. Data as to bond and stock yields, and capital costs to other companies which are deemed to possess similar risk characteristics.
7. Statistical studies indicating the effect on investors' demands of the special circum-

[10] *Ibid.*, p. 9.

stances and characteristics deemed to affect the amount of risk inherent in the operation of the particular utility.[11]

In this chapter the application to the Long Lines Department of American Telephone and Telegraph Company of the principles discussed in the preceding chapter is brought forward. The report concludes that in dealing with this Department the best measure of the return requirement is what the costs of capital would be if the Department had a separate capital structure of its own. In determining such costs, those incurred by other utilities with similar risk characteristics may serve as a yardstick. This conclusion applies also to other similar situations with which regulatory bodies must deal.

Under the heading of "Improper and Inadequate Measures" of the fair rate of return to the particular utility, the following items are listed: the legal rate of interest, prevailing rate of interest on real estate loans, price of short-term money, savings bank interest rates, yields on government bonds, and other securities which do not reflect the circumstance and character of the particular concern.

### *General Levels and Trends of Capital Costs*

"In order to provide a background for the solution of the problem of return determination in connection with specific utilities, Chapter IV, 'General Levels and Trends of Capital Costs,' presents an analysis of capital costs to public utilities in general, together with a brief discussion of the factors which apparently influence such costs. The effects of the long-run trend of capital costs and of the business cycle upon market interest and earnings-price ratios, in respect to different categories of securities, are also given attention, although a complete analysis of these factors has seemed beyond the scope of this report."[12]

[11] *Ibid.*, p. 42.

The data in this chapter indicate that the yields on securities of various classes and risk characteristics bear markedly different relationships under different economic and business conditions. This brings out the dangers of generalization regarding the costs of capital to a particular corporation on the basis of general security indices. Each corporation and class of securities must be individually considered, and valid comparisons can be made only with other corporations and securities of similar risk characteristics.

### *Measurement of Capital Costs by Reference to Market Prices of Securities*

"The discussion in Chapter V, 'Measurement of Capital Costs by Reference to Market Prices of Securities,' is included in the report because of the fact that current costs of capital generally can only be measured through the market prices of securities. In this chapter certain factors which influence the risks inherent in different securities, and hence which affect their market prices, are described. Consideration is then given to the representativeness of market prices of securities, and the conditions necessary for their valid use in measuring properly allowable public utility return. A section is devoted to a discussion of the significance of the earnings-market price ratio on common stock, and its validity as a measure of the rate at which new common stock money could be obtained. Finally, brief mention is made of the necessity of increasing yields at market prices and earnings-price ratios by an allowance for the expenses of marketing securities, if the accepted yields are adequately to represent the costs at which the corporation could obtain capital in the markets."[13]

This chapter concludes that the earnings-market price ratio on common stock, adjusted for costs of marketing the stock, is the best available measure of the necessary return on such stock.

[12] *Ibid.*, p. 9.
[13] *Ibid.*, p. 10.

The deficiencies of this measure are recognized, and emphasis is given to the point that the ratio can be used for this purpose only when considered over a long enough period of time to even out the effect of extraneous market fluctuations. In boom markets or times of depression, market prices of common stock may be materially affected by other factors than earnings, and earnings-price ratios in such periods have little significance. The opinion is expressed that greatest weight should be given to the ratios in periods of industrial expansion when the markets are absorbing large quantities of new stock offerings.

A significant aspect of this chapter is the discussion of the adjustment to provide for costs of marketing securities which must be applied to yields and earnings-ratios at market price before such yields and ratios can be used to determine rate of return. Whether the securities issued be bonds, or stocks, corporations must ordinarily incur certain expenses in issuing and selling the securities, and consequently almost never realize the full market price. When basing the rate of return on costs of capital, allowance should be made for such costs of marketing securities.

*Flotation Costs in Connection with Security Issuance*

"This question of 'financing' costs is more fully discussed in Chapter VI, 'Flotation Costs in Connection with Security Issuance.' This chapter presents various statistical data pertaining to the costs of financing in connection with bonds, preferred stocks, and common stocks. Basic costs of common stock financing through 'rights,' as well as through underwriters, are also discussed."[14]

Flotation costs consist principally of discounts or commissions allowed to investment dealers for selling securities, but also include all other costs of issue, such as legal and accounting fees, duplicate interest, printing and engraving, taxes, et cetera. In the case of debt capital the margin between the price at which the securities are sold to investors and that which is received by the company is ordinarily less than in the case of stock issues. The report considers that the most significant expression of the cost of financing for use in rate-of-return studies is the amount by which the percentage cost to the company is increased by these expenses; that is, the difference between the percentage cost based on the amount received by the company and the yield at the price paid by the public. For some purposes other measures, such as per cent to par value or to proceeds realized, may be equally important, but where the purpose is to determine allowable rate of return, the effect of costs of financing on the percentage costs of capital must be determined.

In the case of flotation costs of bonds all available studies and data were analyzed. It was found that these costs per dollar per year depended upon several factors, of which the following were most important: character of the issuing corporation, term of the issue, size of the issue, and the relative quality of the bonds. The analyses showed that for long-term telephone, electric, and gas issues of large size (over $10,000,000 par value) during 1935, 1936, and 1937 the effective cost of capital obtained through bond issues typically included .16% for cost of financing.

"For the purpose of adjusting yields to investors at market prices to the basis of current costs to the company, two-tenths of one per cent appears to be a sufficient margin to represent cost of financing in the great majority of situations."[15]

In the case of preferred stocks, data

[14] *Ibid.*, p. 10.

[15] *Ibid.*, p. 87.

were available on very few issues, and hence it was difficult to draw definite conclusions. However, for those preferred stocks where information could be obtained, considering electric and gas company issues of over $5,000,000 par value each, it was found that the average flotation costs were .14%, expressed as the differential between per cent cost to the company and yield to the investor, and were 3.1% of the amount realized by the company.

For common stocks, even less information on public utility issues was available, and the facts were obscured in many cases by the methods of financing adopted. For these reasons the subject of common-stock financing costs was approached by studying such financing by corporations in general. On the basis of the limited data available in the case of common stocks sold through underwriters, the following conclusions were expressed:

"... it appears probable that average expenses of flotation on public utility stock issues of over $1,000,000 might vary from 5 to 10 per cent, depending on the size of the issue and other factors. In the larger companies, where offering would be made in amounts of at least $3,000,000, it seems likely that the range of such costs would be from 5 per cent to 8 per cent."[16]

With respect to the question of whether new stock issues can be sold to investors at the current market price, the report concluded that the available data were limited, but apparently

"... a strong company could ordinarily sell reasonable amounts of new common stock through underwriters at a price to the public practically the same as the current market price, and that necessary differences would not ordinarily exceed two or three per cent."[17]

A study was also made of common stock sold through "rights"; that is, offered to present stockholders proportionately to their existing holdings. It was pointed out that since "rights" offerings are frequently used as a means of reducing the stock equity per share, the actual margin of the subscription price under the current market price may not possess significance as an indication of the cost of financing such stock sales.

"Only the margin which would be necessary in order to secure absorption of the stock should be recognized as the reasonable 'cost of financing.' Such a necessary margin may be regarded as being in the nature of a payment to the existing stockholders to induce them to buy the stock, in lieu of making payment to investment dealers to sell the stock to their customers."[18]

On the basis of the study of common-stock offerings through rights it was concluded "that strong, well-established public utilities could ordinarily market common stock through such offerings with a margin between the market and subscription prices of 7 to 10 per cent."[19] It was further concluded that such utilities "could market reasonable amounts of new common stock, under ordinary market conditions, at a total cost not exceeding 12 per cent of the amount realized by the company."[20] However, where it was assumed that the entire stock outstanding was to be refinanced over a relatively short period—that is, where the capitalization was to be "reproduced"—an allowance of 15% was used.

### *Analysis of Investors' Appraisals of Public Utility Securities*

"Chapter VII, 'Analysis of Investors' Appraisals of Public Utility Securities,' contains the results of studies of the effect of various risk characteristics upon investors' evaluations. Insufficient time was available

[16] *Ibid.*, p. 94.
[17] *Ibid.*, p. 95.
[18] *Ibid.*, p. 96.
[19] *Ibid.*, p. 102.
[20] *Ibid.*, p. 103.

to make the analysis of this subject as complete as was desired, and the studies presented are largely confined to a consideration of the effect of security of income to the investor. Such security apparently depends largely upon the earnings 'coverage,' that is, the number of times the interest or dividend requirements on the respective securities have been earned, or, in connection with common stock, the proportion of the corporation's total income available to the holders of such stock. The study of this subject has proceeded from the point of view of determining the effect of earnings coverage on the 'best' investment situations with respect to other risk factors,—that is, the best investments within each range of coverage ratios. The other risk factors are thus assumed to operate to increase the market demands on securities bearing such other risks over the demands on the 'best' investments, considering only securities having comparable coverage ratios. This chapter concludes with a measurement of the over-all current costs of capital in the best investment situations at various times between 1932 and 1938, and for companies with differing proportions of bonds and stock in their capitalization."[21]

The analyses of this chapter with respect to the relationship of yields on the best public utility bonds to interest coverage are summarized in Table I, abstracted from the report and covering only the most recent years analyzed. Similar data with respect to yields at current market prices on the best public utility preferred stocks are shown in Table II, and for the best common stocks in Table III.

TABLE I. RELATIONSHIP BETWEEN YIELDS AT MARKET PRICES OF BEST BONDS AND TIMES INTEREST REQUIREMENTS EARNED*

| Based on Market Prices for: And Gross Income for Year: | | March, 1938 1937 | March, 1937 1936 | March, 1936 1935 |
|---|---|---|---|---|
| Times Interest Requirements Earned | Percentage of Income Required† | Yields at Market Prices | | |
| 10.00 | 10 | 2.95% | 3.15% | 3.03% |
| 5.00 | 20 | 3.01 | 3.22 | 3.08 |
| 3.33 | 30 | 3.15 | 3.31 | 3.22 |
| 2.50 | 40 | 3.50 | 3.55 | 3.46 |
| 2.00 | 50 | 4.40 | 3.95 | 3.83 |

* Report on the Problem of the "Rate of Return" in Public Utility Regulation, p. 128.

† This column represents the proportion of income required to cover interest requirements. The percentages have been computed from the ratios of times interest earned. For example, when interest is earned five times, 1/5 or 20% of the total income is required to meet such interest.

TABLE II. RELATIONSHIP BETWEEN YIELDS AT MARKET PRICES OF BEST PREFERRED STOCKS AND TIMES DIVIDENDS AND PRIOR REQUIREMENTS EARNED*

| Based on Market Prices for: And Gross Income for Year: | | March, 1938 1937 | March, 1937 1936 | March, 1936 1935 |
|---|---|---|---|---|
| Times Requirements Earned | Percentage of Income Required† | Yields at Market Prices | | |
| 3.33 | 30 | 4.15% | 4.10% | 4.40% |
| 2.50 | 40 | 4.30 | 4.20 | 4.45 |
| 2.00 | 50 | 4.60 | 4.35 | 4.55 |
| 1.67 | 60 | 5.05 | 4.65 | 4.70 |
| 1.43 | 70 | 5.75 | 5.00 | 5.10 |
| 1.25 | 80 | 6.85 | 5.65 | 5.75 |

* Report on the Problem of the "Rate of Return" in Public Utility Regulation, p. 141.

† This column represents the proportion of income required to cover preferred dividends and all prior and equal charges. The percentages have been computed from the ratio of times requirements earned. For example, if charges are earned two times, 1/2 of the income is required to meet these charges.

In the calculations regarding common stock, the reported earnings were used without adjustment. It is recognized that accounting practices vary in different companies, particularly with respect to depreciation expense, and that some investors may make adjustments to the reported earnings to cover their ideas of adequate depreciation charges in determining what price they will pay for the stock. However, it could not be determined to what extent investors make such adjustments in reported earnings in their calculations, nor was there sufficient time to determine the effect on the earnings-market price ratios of varying depreciation practices.

[21] *Ibid.*, p. 10.

TABLE III. RELATIONSHIP BETWEEN EARNINGS-PRICE RATIOS FOR UTILITY COMMON STOCKS OF INVESTMENT QUALITY AND PERCENTAGE OF GROSS CORPORATE INCOME AVAILABLE FOR DIVIDENDS ON COMMON STOCK*

| Based on Market Prices for: | | March, 1938 | March, 1937 | March, 1936 |
|---|---|---|---|---|
| And Gross Income for Year: | | 1937 | 1936 | 1935 |
| Times All Prior Requirements Earned† | Percentage of Income Available | Yields at Market Price | | |
| 1.67 | 40 | 10.10% | 6.25% | 6.20% |
| 2.00 | 50 | 8.15 | 5.50 | 5.55 |
| 2.50 | 60 | 7.10 | 5.05 | 5.00 |
| 3.33 | 70 | 6.60 | 4.80 | 4.65 |
| 5.00 | 80 | 6.25 | 4.70 | 4.40 |
| 10.00 | 90 | 5.95 | 4.60 | 4.25 |
| | 100 | 5.70 | 4.60 | 4.15 |

* Report on the Problem of the "Rate of Return" in Public Utility Regulation, p. 146.

† This column was computed from the percentages of income available for common stock. For example, if 60% of the income earned is available for common, 40% is required for prior charges, which are thus earned 2 1/2 times.

The final section of this chapter contains estimates of the current over-all costs of capital in the best investment situations, based on the data summarized in Tables I, II, and III. The methods by which this was done are explained in Table IV, where the capitalization is assumed to consist only of bonds and common stock. On the basis of these calculations the conclusion is drawn that, over the period from 1932 to 1937, 40 to 50% of the total capitalization is typically the optimum proportion of bonds. The data for March, 1932 and March, 1938 "indicate that the increase in over-all current costs where the capital structures have larger proportions of common stock is more marked during times when stock market appraisals are generally pessimistic."[22] The over-all current costs under conditions of the most advantageous capitalization at the dates studied are summarized in Table V. For the period from 1934 to 1938, the average over-all current cost under the

[22] *Ibid.*, p. 150.

TABLE IV. ESTIMATED CURRENT COSTS OF CAPITAL IN THE MOST FAVORABLE TELEPHONE, ELECTRIC, AND GAS UTILITY SITUATIONS IN RELATION TO PROPORTION OF CAPITALIZATION REPRESENTED BY BONDS AND COMMON STOCK*

(Based on Price Data of March, 1938 and Gross Corporate Income for 1937)

| Bonded Indebtedness | | | Common Stock Equity | | | Capitalization Corresponding to Cost of Each Class of Capital and Percentage of Income Required by Each Class (Expressed as Percentages of Total Income) | | | Estimated Over-All Cost of Capital (Per Cent) (10) | Percentage of Bonds in Total Capitalization (11) |
|---|---|---|---|---|---|---|---|---|---|---|
| Percentage of Income Taken by Bond Requirements (1) | Yield to Maturity (Per Cent) (2) | Estimated Cost to Company (Per Cent) (3) | Percentage of Income Available for Dividends (4) | Earnings-Price Ratio (Per Cent) (5) | Estimated Cost to Company (Per Cent) (6) | Bonds (7) | Common (8) | Total (9) | | |
| — | — | — | 100 | 5.70 | 6.56 | — | 1,524 | 1,524 | 6.56 | — |
| 10 | 2.95 | 3.15 | 90 | 5.95 | 6.84 | 317 | 1,316 | 1,633 | 6.12 | 19.41 |
| 20 | 3.01 | 3.21 | 80 | 6.25 | 7.19 | 623 | 1,113 | 1,736 | 5.76 | 35.89 |
| 30 | 3.15 | 3.35 | 70 | 6.60 | 7.59 | 896 | 922 | 1,818 | 5.50 | 49.28 |
| 40 | 3.50 | 3.70 | 60 | 7.10 | 8.17 | 1,081 | 734 | 1,815 | 5.51 | 59.56 |
| 50 | 4.40 | 4.60 | 50 | 8.15 | 9.37 | 1,087 | 534 | 1,621 | 6.17 | 67.06 |

* Report on the Problem of the "Rate of Return" in Public Utility Regulation, p. 148.

Explanation of Data in Columns:

(1) and (2) Table I.
(3) Column (2) increased by .20% as a margin for cost of financing. (Because of the relatively small effect of this factor a uniform allowance was made, rather than varying this allowance proportionately with the grades of the bonds.)
(4) and (5) Table III.
(6) Column (5) plus 15%.
(7) Column (1) divided by column (3).
(8) Column (4) divided by column (6).
(9) Column (7) plus column (8).
(10) 100 divided by column (9).
(11) Column (7) divided by column (9).

TABLE V. ESTIMATED CURRENT OVER-ALL COSTS OF CAPITAL AT VARIOUS RECENT DATES AND IN THE MOST FAVORABLE UTILITY SITUATIONS*

With the Most Advantageous Proportions of Bonds and Common Stock in a Capital Structure Consisting of Only the Two Types of Securities

| Period | Over-All Percentage Cost | Per Cent of Bonds |
|---|---|---|
| Average 1934–38 | 5.11% | 45% |
| March, 1938 | 5.43 | 55 |
| October, 1937 | 5.27 | 46 |
| March, 1937 | 4.69 | 43 |
| October, 1936 | 4.57 | 44 |
| March, 1936 | 4.56 | 30 |
| October, 1935 | 4.77 | 0 |
| March, 1935 | 5.41 | 52 |
| October, 1934 | 5.67 | 53 |
| March, 1932 | 6.89 | 43 |

* Report on the Problem of the "Rate of Return" in Public Utility Regulation, p. 152.

optimum capitalization is 5.11%. The report suggests "about 5.3 per cent as the typical, optimum, current cost rate, if some consideration is given to the 1932 conditions."[23]

With respect to the use of preferred stock in the capitalization, the report concludes that such stock is not in every case an economical method of obtaining capital. It appears that, where the proportion of bonds is moderate (40 to 50% or less), some reduction in capital cost can be obtained if a small amount of preferred stock is used in place of common stock. Also the use of a moderate amount of preferred stock in place of bonds when these exceed 40 to 50% of the capitalization appears to result in lower over-all costs.

*Experienced Capital Costs as a Measure of Return Requirements*

"The subject of 'Experienced Capital Costs as a Measure of Return Requirements' is discussed in Chapter VIII. This chapter also presents a study of the historical costs of debt and preferred stock capital to a group of fifteen large, publicly financed telephone, electric and gas companies, selected for comparison with the Long Lines system, together with a study of earnings-market price ratios on the common stocks of these companies for the years 1928 to 1937, inclusive. Finally, the over-all costs of capital to each of these companies has been computed, based on the combination of the historical costs of fixed income capital and the average market demands on common stock, each weighted by the relative proportion of the class of capital in each company's capitalization."[24]

The methods of return determination adopted in this chapter proceed upon the assumption that

"unless the demands of investors are met, a continued and adequate supply of capital to any particular enterprise, or to the public utility industry in general, will not result. Assurance that needed capital will be available requires good credit, and maintenance of credit apparently requires that the return be sufficient to meet the historical costs of debt and preferred stock, and the current demands of common stock investors."[25]

Since the capital costs of the Long Lines Department could not be computed on this basis, as it has no capital structure of its own, the alternative was adopted of selecting a group of 15 companies, believed to be reasonably comparable with Long Lines, and computing their costs of capital for use as a standard of comparison. The companies selected included practically all large, publicly financed operating telephone, electric, and manufactured gas companies which were judged to be reasonably financed and managed, and for which the necessary data could be obtained.[26]

[23] *Ibid.*, p. 150.
[24] *Ibid.*, p. 11.
[25] *Ibid.*, p. 155.

[26] The companies selected are listed as follows:
*Telephone Companies:*
American Tel. and Tel. Co. (Consolidated Bell System)*
Cincinnati and Suburban Bell Tel. Co. (Cons.)
Mountain States Tel. and Tel. Co.
New England Tel. and Tel. Co.
(*Footnote 26 continued on page 147*)

The report emphasized that the method of return determination used in this chapter should only be applied when a stable rate-base is used, and where the company's capitalization is properly related to the rate-base. The utility's financial needs do not change with variations in "reproduction cost," and when this latter measure of the rate-base is used, it is not clear that there is any relationship of financial needs to the problem of the rate of return. Where a reproduction-cost rate-base is used, the current costs of bond and preferred-stock capital appear to have more bearing on the fair rate of return than do the historical costs of such capital.

In measuring the historical cost of fixed income capital (bonds and preferred stock), the nominal interest and dividend rates on the securities were increased by flotation costs on the presently outstanding issues, and by the unamortized costs on refunded issues as well, whether or not such items had been charged to surplus. Costs of this latter class were considered to be part of the total costs of capital, and if they were to be included somewhere in the total, the logical place appeared to be with the costs applicable to the refunding issues.[27] The charging of such items to surplus, as had been done in some cases, was considered to be simply a matter of accounting, not affecting the underlying facts.

In the case of common-stock capital, the necessary return to maintain credit cannot be determined in the relatively simple fashion applicable to fixed-income securities. Dividends actually paid cannot be accepted in determining allowable earnings, for dividends depend upon earnings. "The fundamental problem is to determine what dividends and what contributions to corporate surplus are necessary and proper in order to maintain for the company that healthy credit position which will enable it to raise needed additional capital at a reasonable cost."[28] In the report this problem was solved by approaching it from the point of view of the stock market's evaluation of the corporation's dividends and earnings—that is, by use of the ratio of earnings to market prices of the common stock. "The market evaluations of earnings and dividends, rather than their

(*Footnote 26 continued from page 146*)

Pacific Tel. and Tel. Co. (Cons.)
Southern New England Tel. Co.
*Electric Companies:*
Boston Edison Co.
Cleveland Elec. Ill. Co. (Cons.)
Commonwealth Edison Co.
Detroit Edison Co.
Southern Calif. Edison Co. (Cons.)
*Gas and Electric Companies:*
Consolidated Gas, Elec., Light & Power Co. of Baltimore (Cons.)
Pacific Gas and Elec. Co. (Cons.)
*Gas Companies:*
Brooklyn Union Gas Co.
Peoples Gas Light and Coke Co. (Cons.)

* Consolidated reports of the Bell System at the present time include all telephone and non-telephone subsidiaries more than 50% owned. Subsidiaries where control by American Tel. and Tel. Co. is less than 50% (such as Cincinnati and Suburban Bell Tel. Co. and Southern New England Tel. Co.) are not included in the consolidated figures.

[27] If the method of return determination discussed in this chapter is accepted by commissions as a proper one, it appears probable that a storm of controversy will rage about this point. Many investigators contend that all unamortized costs pertaining to refunded security issues are properly chargeable immediately against surplus, and are in no event to be considered a part of the costs of capital after the issues have been retired. Presumably, these unamortized costs are either to be disregarded entirely in computing capital costs, or are to be considered as applying to the refunded issues over the period when they were actually outstanding. The arguments for and against these views cannot be discussed here. However, to the writer, it does not seem proper to disregard such unamortized items entirely. Under the second treatment outlined, where the debt discount is charged to the period in which the issues were actually outstanding, the proper annual amortization on any debt issue cannot be determined until such period is known. Since in most cases it is impossible to predict whether a bond issue will be called before maturity, the costs of capital on any issue could not be computed until the issue is called or matures. Usually this will be long after the need for computing such costs for the purpose of determining allowable return has passed.

[28] *Ibid.*, p. 167.

absolute amount, thus becomes determinative of this element of necessary return."[29]

Earnings-price ratios on common stock of the 15 selected public utilities were computed for the 10 years 1928 to 1937, inclusive. Various types of averages were calculated, but it was decided that the most significant average was that determined by assigning weights from 1 to 10 to the ratios for each year in chronological order, with 1937 given a weight of 10 and 1928 a weight of 1. This method is somewhat arbitrary, and may be readily criticized. However, it does have the advantage of recognizing experience over a wide range of conditions and maintaining stability in the averages, while still giving greater weight to the results of more recent years. Since the objective was to determine a representative figure to be applied over the near future, this latter point is important. Complete reliance on only the latest ratios did not appear to be proper, since the mere turning of a page on the calendar might result in an entirely different answer.

For the purpose of inclusion in the total costs of capital, the 10-year weighted average common-stock earnings-market price ratios were increased by 12% to cover the cost of common-stock financing. This factor has been previously discussed.

The cost of different issues and classes of securities were combined to obtain an over-all cost of capital by weighting the costs on each issue with the capital provided therefrom. For common stock the total equity (including reinvested surplus) was considered to be the capital provided. The over-all percentage costs ranged from 5.31% to 7.03%, with the median at 6.05%. The median for the telephone companies was 5.90%, for the electric companies 6.15%, for the electric-gas companies 6.09%, and for the gas companies 6.29%. The Bell System's consolidated over-all capital cost on the basis described was 5.86%.

It may be noted again that these percentages represent the historical costs of debt- and preferred-stock capital, plus the 10-year weighted average of earnings-market price ratios on common stock. These percentages are not the current costs of reproducing the capitalization.

### *The Fair Rate of Return for the Long Lines Department*

"As previously mentioned, the Long Lines Department of the American Telephone and Telegraph Company is but one department of a large corporation, and hence has no capital structure of its own. All the capital employed has been supplied from the general funds of the company. For this reason, it is not possible to determine either the historical or the current costs of the capital employed in Long Lines' operations. This department constitutes a relatively small portion of the total Bell System, and its influence on the capital-raising abilities or the capital costs of that system is not determinable. For the purposes of return determination the Long Lines system must apparently be treated either as a separate organization, financed entirely through the parent company, or as a segment of the consolidated Bell System, that is, the combined American Telephone and Telegraph Company and its subsidiary corporations."[30]

After an analysis of the economic characteristics of the Long Lines Department, the report concludes that,

" . . . were Long Lines separately capitalized, its securities would be at least as attractive to investors as those of the individual Bell companies which do have securities in the hands of the public. It may be assumed that equally good financial management would have been available to Long Lines as was enjoyed by the Associated Bell Companies or the parent company. Long

[29] *Ibid.*

[30] *Ibid.*, p. 180.

Lines apparently has somewhat greater fluctuations in earnings as a result of business cycle influences than is the case with the exchange operations of the Bell System, but the apparently greater prospects for growth of its business should serve effectually to offset this factor as an influence on the credit of Long Lines, assuming it to be separately capitalized."[31]

The analyses of historical costs of capital, previously discussed, determined an average over-all cost for the Bell System companies which have securities outstanding in the hands of the public of 5.9%. For the Bell System as a whole (consolidated American Telephone and Telegraph Company) the over-all historical cost was also 5.9%. It is concluded that, when consideration is given to costs of capital in the years when Long Lines required new investment, its capital costs, if this Department were separately capitalized, would probably have been less than the above averages. If Long Lines' historical cost of property were to be adopted as the rate-base, or given dominant weight,

"a rate of return upon such rate base of 5.9 per cent is concluded to be adequate and reasonable for the establishment of Long Lines' rates for a period in the immediate future. Recognition of the current costs of capital, developed in Chapter VII, as evidence of the 'fair rate of return' would tend to reduce this allowance to a level closer to the 5.3 per cent rate estimated to be the current cost of capital in investment situations comparable to the Long Lines. Such a conclusion would particularly follow the adoption of a current or 'reproduction' cost rate base."[32]

The average net investment in Long Lines Department's telephone assets for 1937 was $338,779,375, and the Department's net income in this year was $24,371,412, representing a rate of return of 7.19%.[33] A reasonable return of 5.9% for this year would be $19,987,651, or $4,383,761 less than actual earnings. In this connection it should be noted that 1938 earnings of Long Lines were probably less than in 1937, although the net investment in telephone assets probably averaged lower also. The exact figures for 1938 are not available to the writer, nor has the cost-of-capital study been extended to this year, so that the exact amount of "excess" earnings in 1938, if any, cannot be stated.

Although the primary purpose of the rate-of-return study being discussed was to arrive at the proper return allowance for the Long Lines Department, with the results just summarized, this report should have considerable usefulness for other purposes. It is hoped that the study has added something to the knowledge on this subject and, if the methods used are accepted by regulatory bodies, the resulting ratios of capital costs will furnish a guide to what public utility return allowances in general should be. Certainly, the report should be suggestive of how the return problem may be approached by objective methods, and of what data have significance for this problem. It is anticipated that future return determinations will proceed more frequently from the objective point of view, and that methods of measuring the proper rate of return will be further developed.

[31] *Ibid.*, p. 184.
[32] *Ibid.*, p. 187.
[33] General Review of Operating Results of the Bell System and Its Principal Functional Divisions, report of Telephone Rate and Research Department (Special Investigation), Federal Communications Commission, June, 1938, p. 29.

# Competition and Mortgage Rates

*By* JOHN H. FAHEY*

WITH the vast savings accumulated in our financial institutions at the present time, a consistent increase in residential construction to meet our housing needs is inevitable, unless building costs are permitted to rise to the point where they present an insurmountable barrier, or we fail to supply the market price range where the demand exists. The policies which should guide home-financing institutions, faced with a certain expansion in their activities after years of restricted operations, naturally are of vital concern at this time.

There have been many discussions of interest rates and their relation to the mortgage market. In these discussions, it often is inferred that certain groups, both governmental and private, seek to protect unduly high interest rates. The Federal Home Loan Bank Board has no such intention and would lend no encouragement to such a program. But it does believe that free and fair competition, on a basis of equality, between all classes of mortgage-lending institutions should be encouraged and safeguarded and is in the public interest.

Generally speaking, the lending institutions of the country now have an abundance of funds. They are ready and willing to finance mortgage loans at a lower interest rate than heretofore. The competition which has developed in the last year and a half among lending institutions is so keen that general rates today on loans which are at all worthy are ruling at 5 to 5½%. Such competition, we believe, will set an equitable interest rate for the future.

There is no doubt that unduly high interest rates and other charges made in connection with the granting of home mortgages in the period before 1929 placed an unwarranted burden on a great number of our people. It should be remembered, however, that not interest rates alone, but poor planning, poor construction, and inflated appraisals contributed to the expansion of an unduly large mortgage debt quite as much, if not more even, than high interest rates. Interest rates on home mortgages, however, have now dropped radically, consistent with the decline in loaning rates in many other directions. The great accumulation of available mortgage money cannot be overestimated as an influence on this situation, quite aside from the operations of FHA and HOLC.

It is easy to be misled as to the significance of the interest rate in its relation to the making of a home mortgage. There is a very real difference between the "nominal" interest rate and the "effective" interest rate. This is well illustrated in the case of Title I loans under FHA. In this case the popular idea is that the rate on a modernization loan is 5%, but the actual cost on a loan averaging 30 months is 9.72%. As a result of regulations made in February, 1938 the FHA "effective" interest rate on one class of Title I loans—those up to $2,500 for the building of a new house—has been reduced to 6.69%.

In the case of home mortgages the nominal rate of, say, 5% or 5½% does not tell the whole story because of initial service fees or brokerage fees frequently imposed. Such fees, in addition to other costs which may be absorbed in the loan, result in increasing the "effective" or real rate of interest.

Take the typical $4,800 loan, that is,

* Chairman, Federal Home Loan Bank Board.

an 80% loan on a $6,000 home, with a basic rate of 5% and a premium charge of ½ of 1% on the reducing balance. The total cost of carrying this loan for 15 years would be $2,259.61. For 20 years it would be nearly $1,000 more, or $3,124.27. The effective interest rate in this case is 5½%. If, however, as is so frequently the case, there is an initial service fee of 1% and a brokerage fee of 3%, then the total cost for carrying the loan for 15 years would be $2,451.61 and for 20 years $3,316.47. The effective interest rate on the 15-year basis would be 6.14%, and on the 20-year basis, 6%. It will be observed, however, that the borrower has actually paid on the 20-year loan $864.86 more than his loan would have cost him if he had paid it off in 15 years. If the borrower paid a brokerage fee of 5% in connection with making the loan, the cost would be $2,595.61 for a 15-year loan and $3,460.47 for a 20-year loan. The effective interest rate on the 15-year loan would be 6.48%, and on the 20-year loan, 6.28%. These cases do not give consideration to appraisal fees, title search, and recording costs. With the addition of such charges, the real interest rate would be higher.

Public misconceptions regarding interest rates are common. It will be recalled that only recently the Federal Trade Commission issued an order against certain automobile companies because of advertising which led the public to believe that new cars could be bought on a deferred-payment plan which involved only 6% interest. The nominal rate appeared to be only 6%, but the actual rate was nearly double that figure, as I recall it.

Depending upon the amount of mortgage money available in the market and the desire of institutions or individuals to dispose of either new or old properties, interest rates as low as 3% are being made by mortgagees at present, in some sections of the country. The home buyer does not realize in some cases, however, that the apparently very low interest rate is more than offset by the inflated value placed upon the home he buys as a result of an exaggerated appraisal. There came to the attention of the Federal Home Loan Bank Board only recently a case where loans were being made on the basis of 3% interest for five years and 5% thereafter, but the fact was that the home buyers were actually paying $700 to $800 more than the fair value of the property and the enticingly low interest rate was being offset by a large margin.

In the last analysis there is no way really to control the fixing of interest rates on home mortgages except as a result of the competitive activity of mortgage lenders. If there is a shortage of money for home mortgages and going rates of interest are high, mortgage-lending institutions will not have loans insured at 5 or 5½%. They will lend their money at market rates and take their own risks. If there is an abundance of money the rates will go down, and those who seek high rates cannot get the business.

The largest group of mortgage lenders in the country are individuals. Today they hold and for years have held more than ⅓ of the urban home mortgages of the country. They are not eligible to make insured mortgages. They meet the competition of the lending institutions and loan their money freely. In 1929, individual lenders held seven billion dollars of the total $21,664,000,000 mortgage debt outstanding.

The savings banks of the country are very large mortgage lenders, so are the insurance companies, trustees, and mortgage companies, and there is no way to control the rates of these lenders except

by fair and honest competition. The question has been raised as to whether the Federal Home Loan Bank Board should not require that money borrowed by institutions from the Federal Home Loan Bank System be loaned to individual borrowers only at rates limited by the Board. This would appear to be a very doubtful policy. It is hardly practicable to provide that the Federal Reserve System shall insist that commercial banks shall not lend to borrowers for home mortgages, or other purposes, except at rates which the Federal Reserve Board shall prescribe. It is doubtful if privately owned banking institutions would accept such a restriction. Certainly they could not then compete, in the making of mortgage loans, with individual mortgagees and other classes of lenders who are not likewise limited in the charges they make.

It would not seem fair that commercial banks owned by stockholders who enjoy the profits accruing on their stock should be given an advantage over mutual institutions where interest or dividends accrue to the benefit of millions of workers who are entitled to receive a fair return on their money, if we are to encourage thrift.

Section 203 of Title II of the National Housing Act recognizes that in insuring loans some latitude as to interest rates must be allowed because of the varying risks. The section referring to the 5% rate provides that it shall not "exceed 6% in certain areas or if under special circumstances the mortgage market demands it." When to this 6% rate is added the ½ of 1% insurance premium charge, as well as brokerage and other charges, it will be seen that the law recognizes the impracticability of imposing a flat 5% rate irrespective of risks.

That brokerage fees paid in connection with mortgage loans are an important factor in considering the cost of mortgage money to the borrower and that such charges affect the rates on insured loans as well as others are indicated by the number of insured mortgages which are sold. Of the insured mortgages made by commercial banks through September 30, 1938, 140 million dollars worth were sold and the banks simply made a commission and presumably will receive a service fee for servicing the loan. Mortgage companies which made 188 million dollars of insured mortgages to September 30, 1938, sold 118 millions of them or 63% of all the loans they insured. Federal agencies bought 72 millions out of 317 millions sold by originators.

The building and loan associations as of the same date made $188,206,000 of insured loans and sold $24,691,000 of loans. For the most part, these transactions represented a brokerage business and the commissions involved were a part of the cost of the loan to the borrower.

A net rate of 5% to the lending institution on a sound mortgage is probably as low as it is wise to have rates in most sections of this country for some time to come. In all types of institutions the 50 billions of dollars of savings in the country represents over 100,000,000 accounts. The average cash value of life insurance policies is $300. The average savings and loan association account is $916. The average mutual savings bank deposit is $675, and the average national bank savings account is $416. To a very large extent these sums represent the week-to-week and month-to-month small savings of workers.

The rate being paid on savings in the areas where most of the money is concentrated is now down to 2 to 3%. In some cases it is only 1½%. Certainly the workers of the country who save are entitled to a reasonable return on such savings and we can hardly expect the

return to them to go much lower than the present level without real discouragement to thrift. In the case of the life insurance companies, since their return on the highest class of bonds today is very low, if they cannot invest in a substantial number of sound mortgages to yield about 5%, they cannot continue to accumulate the reserves required by law and pay the dividends to policyholders which they have been paying. The cost of life insurance has already been increased and it is likely to rise still further.

Practically all the states have laws limiting the interest rates which can be charged on mortgages. There is a wide variation in these laws but even in the states where for many years an abundance of money has been available for mortgage investments the state limits have been fixed high enough so that loans can be made in second- and third-class neighborhoods where the risk is higher and values are declining.

Hundreds of thousands of mortgage loans, ranging from $800 to $1,500 and $2,000, are made all over this country not only on existing homes but on new homes. They are usually long-term monthly amortized loans to people of very moderate incomes. The cost of handling such loans and of caring for collections is, of course, much higher than on the better-class loans. Aside from this, the risk as far as the responsibility of the borrower is concerned is very much greater. If the lending institutions, all classes, and particularly the country banks, savings banks, and savings and loan associations, were by law prevented from lending at a rate above 5%, these worthy borrowers would be deprived of any opportunity of borrowing at reasonable rates and would have to go to the loan sharks, or private lenders who would impose much higher charges, or else they would be unable to get home mortgage money at all.

There is and has been no substantial difference in the rates made on home mortgages by the various classes of lending institutions. Surveys show that the rates of commercial banks for the same kinds of urban mortgages have been the same as those of insurance companies, mutual savings banks, savings and loan associations, and mortgage companies. Rates on short-term loans have been lower than on those for longer periods; they have favored selected areas and penalized more risky localities; they have been lower in the cities than in the smaller communities. But, I repeat, the rates of all classes of institutions in the same districts have been virtually the same. The conditions which a few years ago permitted unduly high interest rates have given place to conditions which make lower interest rates imperative. But the exact rate of that interest will be set by competition among lending institutions themselves, as they seek public use of their funds.

Only an understanding of the amount of the funds which are available today allows a sound perspective of home financing and home construction in the future. For decades, the urban homes in this country have been built out of the accumulation of the small savings of the great mass of our people. Consider the comparative figures on savings today with those of the recent past:

In 1921 when we built 449,000 new family units the total savings of the country in our institutions amounted to but a little over 21½ billions of dollars. It is now well over 50 billions of dollars or nearly 2½ times the figure for 1921. In spite of the contraction of business and national income in 1937, the total savings figure was approximately 30 billions more than in the period before 1921 when we were building homes actively all over the country. Our savings

figure today is the highest in the history of the United States. The increase in 1937 was nearly three billion dollars over 1936 and was the largest increase in any year since the 1929 crash.

In 1937 we saved a billion and a half dollars more than we did in 1929, notwithstanding the fact that our national income was 67 billions of dollars compared with a peak of 78 billions of dollars in 1929.

We have at our disposal today 70% more savings available to build homes than in the years when we were providing new homes at a record-breaking rate.

As a result of the 1920 depression, home construction dropped quickly to 300,000 from 460,000 family units the year before. For many years the figure of annual construction had been about 500,000 family units. As soon as things began to turn for the better at the end of 1920, home building was resumed and, without insurance or any other help, from the 300,000 figure of 1920, construction jumped to 449,000 units in 1921 and by the end of 1922 was up to 676,000.

After the 1929 panic the trend was steadily downward and we reached the low of 55,000 in 1934. It will be observed that after the 1920 panic, because there was a real shortage of homes, as employment was resumed and savings began to accumulate again, home building increased.

Following the year 1934, the figures were as follows:

1935—144,000 family units
1936—282,000 family units
1937—289,000 family units
1938—347,000 family units (estimated)

When our experiences since 1930 are considered, as well as the contraction of 1937, it is a question if the building of new homes is not proceeding about as fast as we may reasonably expect. When we began to recover from the 1920 difficulties, home building increased in the following year by 149,000 units, or 50%. In 1921 it increased 376,000 units, or about 140% over 1920.

In 1935 it will be noted that our increase over the low figure of 1934 was nearly 100%; 1936 was five times 1934; 1937 showed the same percentage of gain over 1934, notwithstanding the business hesitation of that year; and 1938 was six times over the 1934 low figure.

The financial situation in the United States is today completely changed from that of the fall of 1933 and the spring of 1934, when the plan for insurance of home mortgages was projected. In 1933 the monetary gold stock of the United States was valued at about four billions of dollars. In 1933 more than 4,000 banks had suspended payments or closed. The closed banks alone had total deposits of over 3½ billions of dollars. At present, the gold stock of the country is over 15 billions of dollars, our banking situation is stronger than any country has ever seen, and our savings have broken all records.

Many things contribute to prosperity or blight in any era. Future conditions may be influenced by many unforeseen factors, but no one can deny the present possibilities for almost unlimited expansion in the home-financing and home-construction field. The policies of mortgage-lending institutions will have a powerful influence on that expansion. Those institutions which meet the public housing demand, whose operations are at the price level in which the market lies, who offer a sound dollar value for each dollar spent on construction, who offer interest rates and loan terms and safeguards which command public favor, will lead the field. The less progressive institutions in this day of unrivaled competition soon will fall behind.

# The Rust Mechanical Cotton Picker and Probable Land-Use Adjustments

*By* CLARENCE A. WILEY*

AT ONE time "The Stars Fell on Alabama," but now hell is soon to reign in the whole Cotton South because of the inventive genius of the Rust brothers—so say the prophets of doom. According to their predictions, millions of bales of cotton formerly picked by croppers, share tenants, and farm laborers are soon to be picked by untiring iron men with a mania for work and at only a meager portion of the former cost. The prediction is that millions of displaced cotton field-workers will be added to the ranks of those already unemployed. Needless to say, if such fate should befall the South, not only would the wretched condition of those who now till the soil and harvest the cotton crops be made infinitely worse, but also the resulting social infection would spread itself with varying intensity and speed into the social and economic structure of the entire South. Founded on a psychology of fear, the prediction is that success for the Rust cotton-picking machine will be the death knell of family-sized farms and of tenants wherever the "fleecy staple" is now grown.

The Rust brothers themselves share this prophecy. They have been giving much thought, according to current reports, to means of socializing the results of the introduction of the machine in order to "safeguard society against catastrophe."

Throughout the South, especially, there is much talk of "untold disaster" that is to follow in the wake of a successful picker. As for the inventors of the machine, they are committed to foregoing "the chance of making millions" in order to prevent "starvation and homelessness." However, neither the chance of making "millions" nor the prospect of "starvation" can be accepted with any degree of finality. The problems of readjustment resulting from introduction of the machine are regarded by its inventors as so surcharged with dynamite that they contemplate individual use of it subject only to a long list of restrictions. They even hope that state, federal, and foreign governments, as well as the International Labour Office, will provide an ample supply of social shock absorbers to the inevitable readjustments. Further, it has been suggested that various philanthropic foundations and labor organizations be invited to administer the profits in the interest of a world-wide social security program.

The possible consequences of introducing this picker are so horrible to contemplate, in the opinion of many, that the machine should not be used even if it is a mechanical success. The Jackson, Mississippi, *Daily News* proposes sinking the infernal machine, together with its plans and specifications (omitting any plan for the disposition of its inventors), in the Mississippi River.[1] Some southern political leaders have suggested anti-picker statutes in the cotton states in order to avoid facing the consequences of its use.

The fear and excitement in the South over the ultimate results are real, despite the fact that the predicted impending doom may be, indeed, illusory. Even though the mechanical picker proves

* University of Texas.

[1] From *Time*, September 14, 1936.

feasible in the Southwest, problems and maladjustments resulting from its introduction would be of much less magnitude than those predicted by the dispensers of doom—especially by those who never cultivated or picked any cotton. The fear-incited hysteria over the havoc soon to be wrought by introduction of this particular cotton picker has resulted from a deficiency of information concerning cotton-farming processes, cotton picking, cotton prices, picking ability of hand pickers, and tenure conditions in the Cotton South. Some ignorance is manifested also concerning previous attempts to introduce a successful mechanical picker. The public is probably unaware of the fact, as *Collier's* magazine points out, that "Since 1850 two thousand applications for patents on cotton pickers have been filed at Washington. Actually, fourteen hundred patents have been granted."[2] From among these no successful picker appeared. One of the largest agricultural implement manufacturers in the country is reported to have spent already over $3,000,000 experimenting with mechanical cotton pickers, without yet having started commercial production.

Thus, obviously, neither the dream of a successful picker nor the scare of its success is new to American experience. In view of the limitations, subsequently developed, to mechanical picking, probably young "darkies," not yet old enough to pick cotton, will never feel any serious competition with a cotton-picking machine. Much of the existing hysteria over the implications of a successful mechanical picker seems a bit premature, since the likelihood that the Rust picker will throw 75% of the population in share-cropper areas out of employment is born of fear unwarranted by the difficulties of effecting required land-use adjustments in the cotton economy of the South.

However, the introduction of an inexpensive horse-drawn picker would constitute a potential threat. However, this seems not to have been achieved in the existing Rust cotton picker since, because of its present construction and its relatively high original cost, it offers little threat to the hand pickers of the South, except possibly those on a few plantations in the Mississippi Valley and on the plains areas of Texas and Oklahoma—areas adapted to mechanized methods.

Our refusal to be perturbed over the effects of introducing the Rust picker is not because the machine cannot pick cotton; on the contrary, it can—it literally "gathers" cotton—and therein lies its chief weakness. It is more a cotton harvester than a cotton picker. Consequently, it is an expensive machine, not a hand tool. The costs of its operation will be necessarily high, although they have been unconvincingly represented to be comparatively low. Some authorities have made definite statements to the effect that it can be run at a cost of $1.00 per hour. However, it is not clear whether this figure represents only current hour-to-hour operating costs, or whether it includes also all overhead, or fixed, charges. If it is presumed to cover the latter, the calculation is a bit hasty. The eventual overhead cost per hour of operation depends upon two variables—namely, the number of days it can be operated per season and the number of years it will last. Since the machine has not passed the demonstration stage, to guess as to its per-hour operating cost so early in the game is rather premature, to say the least.

Total cost factors in operating the machine, as well as how much it can pick—and how well it picks that—and

[2] *Collier's*, October 17, 1936.

the circumstances under which the machine can achieve the results claimed for it—all these determine the extent to which it will displace low-paid hand pickers now available in the South.

### *Extent of Land-Use Adjustments Determined in Part by Relative Efficiency of Hand Pickers*

The number of hand pickers allegedly to be displaced by the machine represents a sorry lot of pickers, indeed. The source from which current writers get their information on how much cotton a hand picker can pick in a day is a mystery to one who for many seasons dragged a sack between the fleecy rows. Opinions in current literature on the effects of introducing the picker assume that it can pick as much cotton as 150 hand pickers. The Rust brothers are quoted as saying that the machine would "do the work of 50 to 100 men."

The validity of these conclusions depends on how much the mechanical picker can gather in one day, and how much the average hand picker can pick in a day, both under given yield conditions. The demonstration at Stoneville indicates that the mechanical picker can pick 10 bales per day, or approximately a bale per hour, where the yield is one bale[3] per acre and if harvesting has been delayed in order to pick this amount in one operation. But all the cotton the machine will be called upon to pick will not be in Stoneville, nor will the conditions be those presented there. Generally much poorer yield conditions will prevail, and its achievement will be reduced correspondingly— probably to not more than 1 1/2 or 2 bales per 10-hour day. Estimates of how many hand pickers will be required to pick this amount of cotton depend on how much one attributes to each picker. Certainly, estimates of 50 to 100 pounds per person per day are misleading, and probably are made by people who never picked any cotton, or, if they have, never felt the drag of a heavy sack.

I am not a regularly ordained cotton picker, but upon numerous occasions I have picked over 400 pounds of cotton per day consistently six days in the week, and was at the same time trailing many others in the same field. Farm boys and girls in Texas under 16 years of age have been known to pick 500[4] pounds per day, and husky male Negroes often exceed this figure.

It may be alleged that such picking results may be possible in Texas, but not so east of the Mississippi River. There are many grounds, however, for the contention that hand pickers in that area are no worse fundamentally than they are farther west. The small-scale methods of farming in the deep South render impossible the picking of cotton there by the average family at a rate faster than the usual time required for the "opening" of the entire crop. The few bales that can be raised on 15 or 20 acres can be picked only as the cotton opens. Why rush? The limiting factor to larger production per family in that region lies in obsolete production methods and not in the rate of picking. Almost any family there can pick more cotton than it can cultivate under present methods, little in advance of those used in the ante-bellum days. If the average Negro cropper and his family raise only eight bales of cotton that matures over a period of eight weeks, it is feasible to pick at the rate of only one bale per week. If there are four pickers in the family, each needs to pick less than 100

[3] "Bale" refers either to approximately 1,500 lbs. of cotton still containing the seeds, or approximately 500 lbs. of lint equivalent. In other words, only 1/3 of seed cotton is lint.

[4] This amount refers to cotton containing seeds, and is equivalent to 1/3 of a bale of cotton.

pounds per day to achieve required results.

Negro pickers in the South usually pick more cotton when hired out than when picking in their own fields, for usually more cotton is ready to be picked. But southern planters deplore the idea of Negro prosperity and, if Negroes were good pickers, they would become less economically dependent in seasons of heavy production—to the ruin of the plantation system. No doubt when farming on a larger scale is done in the old South, Negroes there also will become better cotton pickers.

The issue over the possible land-use adjustments resulting from introduction of the Rust picker rests ultimately upon economies resulting from the substitution of it for hand picking, taking into consideration also the costs involved in enlarging the farm unit in areas where topography will permit use of the machine. However, in many areas both topography and the presence of stumps and boulders will prohibit the use of picking machines. In other areas, physically more adapted to the machine, the limited financial resources of farmers and the lack of security for the required amount of credit will retard greatly the introduction of the mechanical picker—granting, even, that economies might result from its use.

However, preliminary comparative costs of machine- and hand-picking point to no rapid introduction of the machine even in the more level areas of the Southwest. This conclusion, however, is based on the assumption that the initiative in introducing the machine is to be taken by private enterprise rather than by some social reform agency.

On the basis of the above assumptions, the treatment of the subject hereinafter is confined largely to (1) a detailed comparative cost analysis primarily to see the prospects of an early and wide introduction of the machine; (2) to weigh the extent of the land-use adjustments on the basis of comparative costs; and (3) to point out that introduction of the machine possibly will be slow even in areas adapted to machine farming because of limitations imposed by (a) expense of readjustments in the size of the farm unit, (b) the difficulties presented by cooperative operation of the machine, and (c) the availability of low-paid hand pickers.

Little speculation has been indulged in as to the length of time required eventually for the machine to supplant all hand laborers, because of economies of mechanization along other stages in cotton production, for the reason that the development of techniques in the manufacture of synthetic fibers may by that time render obsolete the production of cotton largely for its fiber. Also, little account has been taken of the possibility that some social agency may supplant private initiative in introducing the machine, for such a policy appears, indeed, remote under existing economic and social philosophy. Consequently, when the barriers are so numerous and so impregnable, it is difficult to see in the near future the necessity for extensive land-use adjustments resulting from wide adoption of the machine.

The comparisons which have been made between the relative picking ability of the machine and of the so-called average hand picker apparently violate most principles of comparative cost analysis. For example, both the profitableness of utilizing the machine and its social impacts depend for one thing upon how many hand pickers it will displace. Estimates thus far available range from 40 to 200—and even the lowest of these is nothing short of gross exaggera-

tion. The estimate that the machine will displace as many as 40 hand pickers is based on the assumption that the Rust picker under superior conditions can gather 400 pounds per hour, while the average hand picker can pick only from 5 to 10 pounds per hour. In such a comparison the performance of the machine under favorable conditions is placed beside that of the worst hand pickers under most unfavorable conditions.

What can the machine do under average conditions? We must here assume that the owner of a Rust picker will not risk waiting until his entire cotton crop is open, but will prefer to pick his cotton land at least twice. The average cotton yield is about 1/3 of a bale per acre, or a yield of only 1/6 of a bale per acre per picking. The machine can cover about an acre per hour. At the rate of eight acres per day, the total result of an 8-hour day's work would net the iron man not over 1 1/3 bales per day, an amount which can be picked easily, under yield conditions given above, by eight or ten hand pickers—even if they are poor cotton pickers. In the final analysis, the extent of readjustments in the cotton area will be determined by the ability of hand pickers to meet the peak-load requirements in cotton picking resulting from a possible extension of mechanized processes to the planting and cultivating phases of cotton production. Hand pickers can pick more than they have been credited with and therefore land-use adjustments will be slow in proportion as hand pickers can hold their own against the machine.

### *Extent of the Area Affected*

Furthermore, the extent to which the Rust picker will displace hand pickers—and thus create a social and economic upheaval—depends upon the extent to which cotton farmers, for the most part small-scale operators, can and will adjust the scale of their operations so as to justify their purchase of the machine. The problem involves considerations other than the mere performance of the machine. A few of these which should not be omitted are: (1) the expected rate of mechanization of cotton-production processes other than those related to cotton harvesting; (2) the complex social and economic problems that necessarily will arise as a result of making the farm unit sufficiently large to permit mechanization; (3) the extent to which mechanization would be feasible on the basis of topography, yields, overhead costs, etc., even if no problem were created by the size of the farm unit; and (4) the occupational adjustments, through works programs or otherwise, necessary to protect even the present low standard of living of hand pickers from further decline.

The invention of a machine is one thing; its economical use under a wide range of conditions is something quite different. The suggestion of the Jackson, Mississippi, *Daily News* to dump the machine into the Mississippi River may be premature, as is also the worry of the despondent darky, holding an empty sack in a cotton field, exclaiming, "If dat thing duz mah wuk, whose wuk am I gwine to do?" Farm managers' knowledge of the costs of machine picking compared with those of hand picking probably will take care of these worries without legislative action against the so-called mechanical menace.

The fear, fanned largely by its own fury, manifested over the results of wide use of a mechanical picker hardly seems justified in view of the comparative ease with which society has cushioned the effects of previous labor-saving inventions—notably, the cotton gin, reaper, thresher, planing mill, and steam shovel.

Hand-threshing of the annual wheat crop of the United States would probably require the labor of a large percentage of the present unemployed in the United States. Still additional numbers would be required to pick the lint from the seeds in 12,000,000 bales of cotton, or to shovel the billions of tons of dirt now handled with steam shovels. Results of the invention of most labor-saving machines have been to make more work as well as to make unemployment. Technological unemployment no doubt has been overemphasized because of the apparent assumption that the amount of work to be done is fixed and, if machines do more of it, necessarily there will be correspondingly less for human hands to do. Like many assumptions in classical economics, it is predicated on the condition that other things remain the same.

However, if the mechanical picker is widely adopted, it will be introduced very slowly rather than suddenly, and many predicted maladjustments will undergo a heavy rate of mortality. At the present writing, not more than a dozen or so late model Rust pickers have been manufactured, some of which have been shipped to Russia for demonstration purposes. Large-scale production of these machines for market can hardly be expected to get under way for several years, granting even that there existed no economic factors limiting the demand for them at present.

Comparative picking costs will be the determining factor in the spread of its use, granting the success of the machine merely as a "picker."

However, by that time, alternative advances in technology may cause the row binder in use in cotton fields to displace southern cotton pickers. It is now known that the entire cotton stalk is nearly as rich in cellulose as is the cotton lint fiber. The entire crop may possibly be cut and bound into bundles and trucked to local processing plants, displacing present cotton gins, for conversion into cellulose for the manufacture of rayon. In the meantime, however, what are the prospects of universal introduction of the Rust picker?

The total costs of operation of the entire mechanical picking equipment will probably be nearer $2.00 per hour than prevailing estimates of $1.00 per hour.[5] The bases for this revised estimate should be briefly stated. Many prolific writers on the menace of the Rust picker apparently are not aware of the fact that the present machine is not constructed so as to be drawn by horse power, but by what *Time* magazine refers to as a "snorting Deere tractor," or one of similar make and power. The cost of both tractor and picker is in the neighborhood of $3,000, the interest and depreciation on which will approximate $615 annually,[6] on the assumption that, with good care, they will last eight years. However, the average period of their use during each cotton-harvesting season can hardly be expected to exceed 45 or 50 days. This annual overhead, when converged on the normal number of days of operation, will run the overhead charges to approximately $13 per day, whether the machine picks in heavy- or light-yielding cotton. Then there are in addition actual operating costs. Assuming that the machine travels at the rate of three miles per hour, in a 10-hour day it will travel 30 miles, which

[5] When county road equipment, consisting of a small tractor and grader, is employed on farms in the construction of terraces, the charge in the South usually is $2.00 per hour on the basis of actual operating costs.

[6] The rate of interest here assumed is 8%—no doubt higher than that prevailing in mechanized farming sections of the country, generally—for the reason that rates are higher in the South and Southwest than elsewhere. The bank rate is usually 8% or more. Production credit loan rates, of course, are lower, but often only when inspection fees, etc., are ignored.

will cost $3 per day, on the assumption of 10¢ per mile to cover oil, gas, breakage, and repairs. Also two semi-skilled men are required to operate both the tractor and the machine at a cost of approximately $2 each per day. The combined cost, therefore, would be $20 per 10-hour day, or $2 per hour.[7]

Thus the per-hour cost is practically constant, whereas the cost per 100 pounds of cotton picked will be determined by the amount gathered per hour. It must be borne in mind that, when the machine is put in the field to pick cotton in competition with hand pickers, it will have to pick cotton under average conditions with average yields. It cannot perform under the approximately ideal conditions prevailing at Stoneville, where the cotton was practically all open and where the yield was unusually high (about a bale per acre).

*Collier's* magazine carried an editorial in its issue of October 17, 1936, entitled "Machines Won't Wait." Similarly, cotton farmers cannot afford to wait until their cotton is all open to place either hand pickers or a machine in the field to pick it. The necessity of harvesting cotton according to the rate of "opening" will raise the cost of mechanical picking. The machine will have to be run two or three times over most cotton fields to reduce the risk of waste of open cotton from storms and floods. Under average yield conditions the picker will be able to get about 1/6 of a bale (250 pounds) per acre each time over at a cost of $2, since an acre an hour approximates the standard of performance of the new machine. At this rate, it will pick 250 pounds of cotton for $2, or at the rate of 80¢ per hundred.

But the dancing is not over until the fiddler is paid. Indirect costs are still to be added. The machine is essentially a cotton harvester, not a cotton picker. It exercises no power of selection; it cannot discriminate. Neither does it get all bolls at the end of the row, nor does it turn back to gather what it has missed. It cannot tell white cotton from leafy trash. By and large, then, these indirect costs have to be charged to operating costs of the mechanical picker. Agriculturists who watched the demonstration at Stoneville admit that "it knocks some cotton to the ground," and "leaves some open bolls unpicked." Possibly the best the machine can do the first time over is to get 80% of the open cotton, entailing a loss in yield. Mechanical picking will cause also a reduction in the grade of the cotton which will take from one to five dollars per bale from the price of the cotton. When these costs are added to the 80¢ per hundred accounted for above, the final cost will approximate 90¢ per hundred as compared with an average of about 60¢ per hundred for hand-picked cotton.

Of course, when the picker is more widely used its purchase price, thus the picking cost, will come down. The fly in the ointment, however, is that wide use will be unlikely until picking costs come down. Its general adoption and the resulting social maladjustments and readjustments in land use will come very slowly, except possibly in areas adapted to mechanization. But in these areas the size of the farm unit does not present the problems found east of the Mississippi, to make no mention of the limitations to mechanization imposed by topography. Moreover, in the timbered sections of the cotton belt, embracing much of the area from the Brazos River in Texas to the Carolinas, the methods of land clearing have left many stumps as a menace to mechanized equipment. True, further

[7] If and when the picker is so geared to the tractor that only one operator is required, the labor cost can be reduced correspondingly.

advances in technology can remove these barriers, but only at additional expense which appears not to be offset by comparable economies from mechanization in view of an abundance of cheap labor. Were some economic forces introduced into the South, possibly more industrialization and a decreasing birth rate among the population, which would effect a better adjustment between the rural population and the land supply, thereby causing wages and standards of living to rise, mechanized cotton production would be forced in areas adapted to such methods. Competition eventually would force other areas to revert to some more extensive use, except possibly some areas in the vicinity of urban centers. On the contrary, in the absence of forces external to cotton production tending to increase the wages of farm labor, it hardly seems logical to expect the machine to displace hand labor in picking unless it can show greater economies than are now in sight.

True, the invention of the grain binder, the combine, the cotton gin, the thresher, and the automobile was followed in each case by its production and use on a very large scale, thereby reducing the original cost, but the Rust picker is hardly an analogous case. While these other mechanical inventions reduced the cost of performing certain tasks to 1/10 in some instances, or even less, of their former cost, and for this reason offered a great incentive for their adoption, such seems not to be the case with the Rust picker. It is yet to be demonstrated whether that new invention will reduce cotton-picking costs by one penny. Unless further use of it proves the contrary, producers in areas not adapted to mechanization of the other stages of cotton production can make no economical use of the machine.

It is to be recalled, too, that in spite of the fact that introduction of the motor vehicle afforded tremendous economies in transportation costs, the rate of its adoption was hastened in no small degree by the enormous indirect subsidy to the automobile industry through the construction of streets and highways at public expense. No similar social action seems likely to hasten the introduction of the mechanical picker, were there even a general desire to do so. For this reason the mechanical picker will have to forge its way into the cotton-production program of the South strictly on its own merits. Moreover, these merits will have to outweigh preponderantly those of existing modes of production, for changes are made slowly where the adjustments involved are so varied and extensive. For this reason, the mechanical picker is not likely to be introduced to any large extent except in areas now largely mechanized, where tractors for the most part are already standard farm equipment, and the size of the farm unit has been adjusted to mechanized methods in all except the picking stage of cotton production. In other areas less well adapted to mechanization, where labor is already cheap and the topography is a limiting factor in the enlargement of contiguous tracts of cotton land, the first costs of the machine and tractor, overhead and direct operating costs, waste, etc., will likely offset any advantages from speeding up picking.

### *Possible Readjustment Areas*

In limited areas the machine can be used profitably, but these will necessarily be areas where large fields are adapted to cotton and where labor is scarce and wages relatively high. It will not be used in the Old South where Negroes are plentiful and wages will be low for decades to come. The Southwest is where the machine will likely find its most secure footing, because of the size of cotton farms and the topography of

the land. However, not even in this section will the picker be used if a plentiful supply of Negro and Mexican laborers, willing to work for low wages, is available near by. The Negroes of east Texas and the Mexicans of south Texas are much nearer the cotton fields of west Texas and of Oklahoma today than they were to fields of adjoining counties a few decades ago. The automobile and the truck have increased tremendously the fluidity of hand labor. Today the spectacle of a modern truck whisking a crew of 25 Negro or Mexican pickers from somewhere in east or south Texas to the south plains of west Texas, a distance of some 400 miles, overnight is not uncommon. Furthermore, Mexico has untold additional laborers who can and will come when both permission and opportunities for jobs are offered.

The possibility of a real social and economic hurricane in the South as the result of introducing a mechanical picker is dependent upon the perfection of a small horse-drawn machine that can pick clean cotton, and get it all, at a price lower than is possible with hand labor. Such a machine would not only pick cheaper, but it would not call for the reorganization of the entire set-up on most southern cotton farms.

The mechanical picker will by no means be introduced soon on all cotton farms, even of the Southwest. Introduction of the Rust mechanical picker, at its present price and with its power-geared construction, is out of the question at this time on all but the large farms. Even on the larger holdings its use is problematical, because more than mere ability to buy the picker and a tractor is involved. Where tenants have heretofore been cultivating a plantation, each operating his small tract with horse-drawn equipment, the whole system of farming would have to be reorganized in order to introduce the mechanical picker. Not only will share tenants and croppers be dispensed with in picking cotton, but they will no longer be needed on the farm. Mechanized picking necessarily will mean mechanized planting and cultivating. There is no logical excuse for buying a mechanical picker to pick the few bales that a cropper or share tenant raises if he and his family are retained to cultivate the land.

If the picker comes in, the tenant must go out. With him must also be sacrificed vast heaps of then obsolete horse-drawn equipment, as well as horses and mules, to say nothing of the fences and tenant houses which will have to come down in order to consolidate small holdings into larger ones suited to tractor operations. Truly, a new twentieth-century enclosure movement will have to be ushered in. Tractor methods will mean not only that obsolete machinery must be junked, but new and expensive plowing, planting, and cultivating equipment will have to be purchased. The total per-farm cost of this reorganization would exceed the present value of the average Texas or Oklahoma cotton farm. Is the game worth the candle? Enclosure movements have been undertaken on such a scale to overcome the inefficiencies of the feudal system of the Middle Ages, but cannot logically be expected solely for the purpose of introducing a piece of farming machinery not well adapted either to the land upon which it is to be used, or to the pocketbook of the prospective purchaser.

A further deterring factor is that farm wage rates in the South will tend to fall in direct proportion to the extent to which the mechanical picker is adopted. This situation will constantly apply the brakes to its further adoption unless society offers some remedy for the social maladjustments. In areas where tractor equipment is already utilized, and labor

both scarce and high, the Rust picker possibly will be utilized—if it doesn't lower the grade of the cotton too much or leave too large a portion of it in the field.

Moreover, the problems incident to such an enclosure movement in the Old South are even much less soluble than are those in the new Southwest. The Negro laborer is already there, and his wages are low. He also has his little shanty located on his 20 acres cultivated with the aid of a Georgia stock and a mule. For the owner of large tracts to sacrifice all these along with his darky tenants presents an almost insurmountable economic difficulty. Probably an upset of this character is essential to the reconstruction of the cotton economy of the South, with its attendant evils of misery, poverty, ignorance, and poor health. However, the initial blow to break the vicious circle of ignorance and poverty must be delivered by public authority in the interest of social welfare where physical conditions and standards of living offer private enterprise no economic incentive for doing so. At present, no existing social program for the South gives promise of hastening the process. In view of the grip of "agrarian" influences on policy makers, the trend seems tending in the other direction.

Even if the difficulties connected with internal reorganization were not present, effective enclosures embracing all the present cotton acreage of the South could not be completed until some way had been found to remove from many areas the swamps, muddy sloughs, eroded hillsides, and Norfolk sand ridges now lying between the various 20-acre dominions of numerous "old Moses" and their grey mules. However, there are many level acres along the valleys, and on some upland. In the course of time, existing small units in such areas no doubt will be consolidated into larger units better adapted to mechanization in the planting and cultivating of cotton. Once the larger farm unit and the tractor are there, the step toward mechanization of picking will be much easier. In the meantime, cotton production in the Southwest likely will have undergone even greater mechanization. Thus, when farm units become larger, the picking process will constitute the "peak" problem. At that time the incentive to introduce the picker will be much greater than it is now, because the cotton grower will be forced to choose between the machine picker and dependence upon a group of itinerant pickers similar to that which formerly harvested the wheat crop and which now harvest the fruit crop.

In the meantime, however, the social problems presented as a result of the process may have attracted social attention to the extent that places for dispossessed farmers may have been found elsewhere in our society. In the event social adjustments of this character could be achieved, economic benefits would inure both to producers remaining in the field and to the submerged groups who in the past have cultivated and harvested the great American cotton crops in the main by hand methods.

Furthermore, the assumption is logical that complete mechanization of cotton production and harvesting would lower somewhat the costs of cotton production. To the extent that this result obtains, areas both in the Old South and the Southwest not adapted to mechanization will probably have to go out of the cotton-production business. Should this happen, some social planning will be required to find uses for the land thus released and for the people at present engaged in producing and harvesting cotton.

The extent to which this result will ensue depends much upon profitable al-

ternative uses for land in the Southwest adapted to cotton production. Some, however, fear that serious maladjustments necessarily will arise when the mechanical picker is utilized to an extent in the plains area of the Southwest sufficient to drive down the cost of producing cotton, and therefore its price, to where the Old South cannot compete, reducing to poverty not only the southern cotton tenant but also his landlord. Some agrarians[8] of the Old South are today planning a program of self-sufficiency for farmers of that region in order to hedge against the day when they can no longer afford to produce cotton in competition with mechanized areas of the Southwest.

That time will come, they say, when cotton can be produced in the newer areas for five or six cents per pound, because the Old South and Southeast will then have to get out or starve out. This position, however, in so far as it deals with the influence of the mechanical picker alone, is based upon a rather fantastic notion of the relation between the cost of picking and the market price of cotton. Other costs of production become much neglected suitors. Of course, if picking were the sole, or major, cost of producing cotton, then a reduction of ½ in the picking cost would have a very definite tendency to reduce the price of cotton to ½. But the reason is akin to the argument that the price of bread ought to come down ½ when the price of wheat falls correspondingly, or that the price of wool should have fallen greatly with the perfection of the portable power shearing machine now widely used in the West.

Unless sufficient grounds warrant the contention that other costs of production will fall in sympathy with marked reductions in the price of picking cotton, it appears quite plausible that, if a mechanical picker were introduced in the South and could pick cotton for nothing, this event alone would tend to lower the price of cotton only about 1½ cents a pound, because this is approximately the long-run price of picking cotton in the South when the cost per pound of seed cotton is reduced to a lint basis.[9]

The foundation for the foregoing fear is that the limiting factor in producing cotton has been inability to get it picked. With a successful mechanical picker, it is contended, improved technique could be employed to greater advantage in planting and cultivating cotton, resulting in a lower cost of production as well as a decrease in the cost of picking. The validity of this conclusion depends, in the first place, upon the findings of research as to just how much more land in the Southwest, not already using the latest mechanized methods of cotton production, is adapted to cotton raising. In the second place, it depends upon whether enough cotton could be produced in the Southwest to supplant completely production in the Old South. If such were not the case, the latter area would remain, as it is now, the marginal cost area and the differential advantage enjoyed by the Southwest would be inherent in the nature and topography of the land, and would in a relatively short time be capitalized into land values. The ultimate result would be rather quickly to equalize individual costs in the two areas, having the effect of retarding the extension of production in the Southwest, while at the same time lessening the tendency toward declining production in the Old South.[10]

[8] Those advocating, among other things, the ownership on the part of present tenants of small subsistence farms as a means of making them independent of both the demoralizing influence of the tenancy system and the hazards of commercialized farming.

[9] Approximately ⅓ of the total weight of cotton in the seed is represented by the lint.

[10] Quite true, if the world demand for American cotton should decline to the extent that the Southwest

(*Footnote 10 continued on page 166*)

In the third place, all the predicted effects of such regional competition in cotton production are based on a two-fold assumption. These assumptions are (1) that the Rust picker is an economical picking machine which will be widely introduced and (2) that more economical picking methods necessarily will bring vast economies in other stages of cotton production. The composite result would be much lower cotton prices.

*Alternatives to Individual Ownership*

To many of those who admit that individual ownership of a picking machine will probably be an uneconomical venture, cooperative ownership of a machine can be expected, and will achieve better economic results.

But the dispensers of despair reply that they do not contemplate that each owner would find it to his advantage to own such a costly machine individually. Rather they contemplate that cooperative associations will be formed, and some dozen or more farmers will purchase a machine jointly. This suggestion is largely befitting only the agricultural philosophers, and not the dirt farmers in cotton areas who have lent their tools to neighbor farmers, or have tried joint ownership of intricate farm machinery.

In view of the foregoing difficulties, an alternative solution to the problem is suggested. Custom picking is to be the *modus operandi*. One individual in each community is to own the machine and necessary power equipment, and move from farm to farm contracting custom picking. The suggestion sounds good and has worked in the case of the binder and the thresher. Two particular difficulties, however, are apparent. First, the topography in wheat areas is different from that in the Cotton Belt. In the swamp dissected areas of the Old South the machine would best serve the itinerant operator were it to assume the characteristics of an amphibian, whereas in the rugged areas of Texas and Oklahoma the owner would be subjected to heavy expenses for repairs, and the machine would have to be charged a correspondingly higher rate of depreciation—that is, it would have a shorter life. Secondly, possible economies from use of the binder in preference to the hand scythe are not present as an inducement to shift from hand methods to machine picking. Custom picking is not likely to come into vogue at a price of $15 per bale, with the prospect of leaving 20% of the cotton in the field, and damaging the grade of that which it picks by $5 per bale, when farmers can get their cotton picked by hand pickers for $7 or $8 per bale.

However, with so many unknowns in the equation, definite solutions for phases of the problem should await more reliable information. Current literature on the effects of the invention of the Rust picker is so full of exaggeration and misinformation that probably the conclusion is warranted that most Negro pickers of Dixie can return, for a time at least, with their sacks to the cotton fields of the South with little fear of being forced into the ranks of the unemployed by a savage on-rush of the mechanical picker.

Moreover, with some misgivings over venturing predictions, the conclusion is probably warranted also that, while the snorting tractor pulls the ravenous cotton-eating monster, with its bellying bags of cotton, over occasional fields in the Cotton Belt, cotton farming will go on much as usual on most southern farms, and the mechanical picker will scare fewer darkies from the plantation cotton fields than will the revived ghosts of the Ku Klux Klan.

(*Footnote 10 continued from page 165*)
could supply domestic needs, problems of readjustment would increase in complexity. Also, cotton production in the Old South might be greatly reduced. Few pickers of any sort would then be needed.

# The Ohio River-Lake Erie Canal

*By* RENWICK G. MARTIN*

CONSTRUCTION of a waterway connecting the upper Ohio River with Lake Erie has been a matter of public interest in the Pittsburgh district since the early period of its industrial development. As the Pittsburgh area became more and more important to the whole country and as dependence on distant raw materials increased, the provision of low-cost transportation to and from the upper Ohio Valley likewise became more important to the whole country. This made an Ohio River-Lake Erie canal eligible for consideration as part of the national waterways system, and in 1930 Congress required studies to be made to determine the feasibility of the project.

The policy of the Federal Government in regard to developing a new waterway should be based on these principles: the waterway must serve the commercial and navigation interests of the country as a whole; and a substantial saving in cost of transportation must result from the project. Although doubt exists as to whether this policy has been actually followed in past river and canal programs, these two principles are criteria by which the proposed canal should be judged. In this article the savings in transportation costs and the net economic savings are estimated, and the probable incidence of these savings, if any, is discussed.

## *I. The Proposed Canal*

*Historical Background.* During the past 100 years one canal has been built, others proposed, and a number of government moves have been made in regard to an Ohio River-Lake Erie waterway. In 1840, Pennsylvania completed a canal that extended from the Ohio River to Lake Erie:

"The canal followed the general course of the Beaver, Shenango and the Little Shenango rivers and Conneaut creek and then paralleled the lake front to Erie. The canal was used for the operation of small boats for about thirty years, then sold by the state to private interests and finally abandoned. The Mahoning river up to Warren, Ohio, was utilized as part of a canal connecting the Pennsylvania state canal with the Ohio canal at Akron."[1]

Moulton, in *Waterways versus Railways*, published in 1912, estimated the construction cost of an Ohio River-Lake Erie canal at $53,000,000 and noted: "A private company has been chartered for this purpose, but the work of construction has never been started."

A Lake Erie and Ohio River canal board has been functioning for a number of years, recommending a canal by way of the Beaver and Mahoning rivers and Mosquito Creek, to cross the divide and eventually descend to Lake Erie near the mouth of Indian Creek. The route would require 24 locks and diversion of water from the Allegheny basin which was opposed by proponents of the Allegheny route. In 1925, Army engineers, after a study of the cost and advisability of a canal to Lake Erie, recommended that the project should not be undertaken.

In 1930 Congress authorized the Secretary of War to make preliminary

* Beaver Falls, Pa.

[1] *The News-Tribune*, Beaver Falls, Pa., October 26, 1937; an article based on excerpts of the U. S. Army District Engineer's report which were made public during the meeting of the Board of Army Engineers considering the report. As yet the complete report has not been available to the public, although it has been transmitted to Congress.

examinations and surveys of the Beaver, Shenango, and Mahoning rivers. In 1933 an unfavorable report was submitted by the district engineer on the "stub-end" canal up the Beaver and Mahoning rivers to Youngstown. The Board of Engineers for Rivers and Harbors reversed the decision and recommended construction of the canal at an estimated cost of $47,000,000. A bill (H. R. 6732) authorizing construction of the canal was passed by the House of Representatives but was revised in the Senate by elimination of the "stub-end" canal and authorization of a through canal from the mouth of the Beaver River to Lake Erie, at or near Ashtabula, and this only in event of a favorable report by the Board of Army Engineers after a complete survey. The Beaver-Mahoning (Ashtabula) project must be adjudged the best of the four proposed Lake Erie to Ohio River canals. The District Engineer concluded the survey, selecting the Beaver-Ashtabula route and recommending its construction. The Board of Army Engineers held hearings in 1936, and in 1939 it approved the selection of the Beaver-Ashtabula route but recommended construction only of the Beaver-Mahoning section (the "stub-end" canal). Construction of the remainder of the canal is to depend on further studies to be made of that part. Congress must still set aside funds for the project since the original bill contained no appropriation.

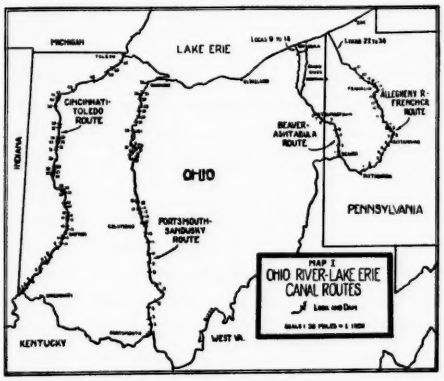
The four routes which the Army Engineers considered were: (1) Cincinnati-Toledo; (2) Portsmouth-Sandusky; (3) Beaver-Ashtabula; and (4) Allegheny River-French Creek (Map I). The Cincinnati-Toledo route was not considered feasible because a sufficient water supply could not be developed to operate the canal at full capacity. The district engineer reported that the Portsmouth-Sandusky route possessed less favorable physical and much less favorable economic aspects than the Beaver-Ashtabula and the Allegheny River-French Creek routes. Comparing the latter two, the Allegheny River-French Creek route was said to be 86 miles longer, with a summit pool 225 feet higher, having 442 feet more lift, and involving 33 locks instead of 14. As a result, a complete survey was made of the Beaver-Ashtabula route on the basis of which the Board of Army Engineers have reached their decision.

*Physical Description.* The proposed canal would be 103 miles long with a minimum channel depth of 12 feet and a bottom width of 250 feet, except in the Youngstown industrial district where the width would be restricted to 200 feet to avoid heavy expense. In general, it would follow the course of a pre-glacial river known to geologists as the Anabeaver.[2]

The route (Map I), northward from the Ohio River at Beaver, Pennsylvania, would utilize the natural channel of the Beaver River to the greatest practical extent, canalizing it by means of three locks and dams. From the Beaver the

[2] "The ice sheet of the Pleistocene epoch, which covered a considerable area south of Lake Erie, appears to have changed the ancient drainage system, the district engineer's report said. 'During the glacial period the outlet of the Anabeaver river to Lake Erie became obstructed by the ice sheet and the direction of the flow was reversed to the upper Ohio River valley. The preglacial channel became filled with glacial drift. Grand river valley was the site of a large lake during the retreat of the ice sheet which later deposited a terminal moraine (earth and rock deposit) at the north end of Grand river valley. The lake finally found an outlet to Lake Erie along the southern side of the moraine and through it at Painesville, Ohio. In the vicinity of the buried channel at the head of the Grand river, northwest of Warren, Ohio, one of the lowest points on the Lake Erie-Ohio River divide occurs.' It is approximately at this point in the divide the engineers plan the largest cut for a land canal connecting the headwaters of the Mahoning and Grand rivers." (*The News-Tribune*, Beaver Falls, Pa., October 26, 1937, *op. cit.*)

canal would enter the Mahoning River, which would be canalized by five locks and dams. The summit level, Lock and Dam Number 8, would continue from this point to within seven miles of Lake Erie—up the Mahoning River to a point about 1½ miles above Warren, Ohio, where the river makes an abrupt turn. Here the waterway would leave the Mahoning valley by a canal and cross the divide. Beyond the cut the canal would extend into Grand River valley.




By means of a dam (Number 9) near Harpersfield, Ohio, the summit-level pool and the water-supply reservoir would be created. The reservoir would have a surface of 107 square miles, a gross capacity of 2,000,000 acre feet, and would permit the summit-level pool on the canal to be 56 miles between Locks Numbers 8 and 9. From the dam near Harpersfield, the canal would cross the secondary divide and descend the slope to the lake by means of six locks within seven miles. Bridge clearance over the canal would be 27 feet. Locks would be of the double-chamber type, each chamber 56 feet wide and 360 feet long, with an average lift of 31 feet.

*Engineering.* Only one criticism of the canal from an engineering point of view has been made. With reference to the Grand River reservoir, a geologist

"found that the ridge between the proposed reservoir and Lake Erie was largely an old glacial moraine, full of porous material. He testified that although the upper Grand river was at flood stage, in its lower valley it was well within its banks, the high water being absorbed into the surrounding earth; that on the north side of the ridge streams of water as large as his arm were pouring out of the ridge at numerous points; that the entire basin was so porous that it would be a practical impossibility to impound a reservoir of this size."[3]

This should be investigated by the Board of Engineers before a final decision on the project is reached. However, it seems likely that the district engineer considered the factor and believes the basin can contain the reservoir; therefore, for the purposes of this article, it is assumed that the canal is feasible from an engineering standpoint.

### *II. Economic Aspects*

The economic advisability of the canal depends on the net savings estimated to result from its construction. The correct estimate is more difficult to ascertain since a wide variety of opinions exists as to the probable economies. The chairman of the Canal Committee from Youngstown declared the project "to be economically justified and necessary if 800,000 people are not to lose their employment and their homes, and if the district is not to dry up."[4] On the other hand, an opponent testified that

"the so-called public savings are really private savings at public expense . . . . This is comparable to the Government building a four track railroad between the Ohio River and the Lakes and permitting everyone to use it free of cost, the expense of construc-

[3] Upper Ohio Valley Association (Pittsburgh, Pa.), *The Lake Erie and Ohio River Canal, Beaver-Ashtabula Route: A Synopsis, with Complete Report on Its Economic Aspects*, p. 2.

[4] *Iron Age*, May 23, 1935, p. 28.

tion and maintenance being borne by the public."[5]

Estimates of savings include (1) those accruing solely from transportation and (2) the net economic savings.

*A. Transportation Savings*

To obtain a reasonable estimate of transportation savings it is necessary to examine the probable volume of traffic, the physical capacity of the canal, and the cost of moving the traffic in comparison with railroad rates.

The following estimates of volume of traffic available to canal carriers are based on the assumptions that railroad rates will be maintained at their present level despite the competition of the canal, and that there is no elasticity whatever in the demand for transportation service in the area. Further, it is assumed in this section that the services offered by rail and canal are of similar quality, and that a saving in transportation costs by water transportation will induce the shipper to use that means regardless of the relative speed and dependability of service. These factors are discussed in a later part of this article.

*Available Traffic.* The district engineer estimated that the following traffic would move on the proposed canal:

| | |
|---|---|
| Iron ore | 10,960,000 tons |
| Limestone | 1,680,000 tons |
| Lake cargo coal | 10,000,000 tons |
| Lake fuel coal | 150,000 tons |
| Commercial and industrial coal: | |
| Ex-rail | 4,405,000 tons |
| To lake cities | 3,640,000 tons |
| To Beaver Falls | 55,000 tons |
| Total | 30,890,000 tons |

Representatives of the railroads do not state the volume they estimate would be carried on the canal, but they believe the figures of the district engineer to be excessive for several reasons. (1) The engineer's estimates are based on the 1929 volume of traffic of the Pittsburgh-Youngstown area. The justice of this criticism is evident. (2) With respect to lake cargo coal, the engineer estimates that ½ the tonnage from the Upper Ohio (Ohio Number 8, Monnsville, Freeport, Butler, Mercer, Middle, Cambridge, and Kanawha fields) and Upper Monongahela (Fairmont, Connellsville, and Pittsburgh fields) districts will move by the proposed canal. The railroads claim that a large part of this is inaccessible to water transportation. Of the 7,735,675 tons in the Kanawha (includes Kanawha, Coal River, Logan, and Coal and Coke fields) only 22½% borders the waterway system. Further deductions from the total tonnage available made because of inaccessibility leave but 14,500,000 tons from which the 10,000,000 estimated by the engineer could be obtained. However, the railroads do not admit that some coal from the inland mines may be moved to the waterway and then shipped by way of the proposed canal. This seems likely, although the savings would be less than estimated because of increased handling.

(3) The engineer estimates that a total of 18,250,000 tons of lake cargo and commercial coal would be available for the canal to be shipped to Youngstown, Lake Erie ports, and Detroit. The railroads claim, through another representative, that only 7,568,000 tons "from mines that are developed or could be developed" are near the Allegheny, Monongahela, or Ohio waterways—hence, available for the canal. The same criticism of inaccessibility, as noted in respect to lake cargo coal, applies also to this item. The fallacy of the criticism is conclusively indicated by the fact that, in 1926, 21,750,321 tons of coal were shipped on the Monongahela River.[6]

[5] Upper Ohio Valley Association, *Excerpts from the Case of the Opponents of the Proposed Pittsburgh-Ashtabula Canal*, pp. 12–3.

[6] U. S. Army, Corps of Engineers, "Transportation in the Mississippi and Ohio Valleys," p. 208.

(4) The railroads maintain that the life of high-grade ore in the Lake Superior mines is "clearly not over 30 or 35 years," implying that at the end of that period no more ore will be available for canal traffic. The inference is incorrect, as new fields are being developed and new processes are being discovered to use economically the lower-bearing ore.[7] (5) The railroads claim the estimate of available limestone traffic is excessive because the engineer used the wrong rail rate on traffic destined to Aliquippa and Midland, thus including 485,000 tons which could be moved by rail at a lower rate, and because the two largest potential users of the limestone estimated to be carried on the canal (Jones and Laughlin and Republic Steel) either own or control their own limestone quarries. These quarries are not located on the proposed waterway and, since the steel companies have considerable investment in them, it would be cheaper to continue using these present sources of limestone than buy from other quarries whose limestone would be moved on the canal at lower transportation cost.

(6) The Army engineer made no estimate of savings which might result from a "potential commerce" in miscellaneous commodities. This seems wise, because of the serious doubt as to whether the canal would be of such capacity that any but bulk traffic could be handled.

In view of these criticisms, it is proper to regard the Army district engineer's figure (30,890,000 tons) as a *liberal* estimate of traffic available for the canal.

*Physical Capacity.* Before determining what transportation savings would result from diversion of this traffic to the waterway, the physical capacity of the canal to handle such volume should be investigated.

The maximum probable traffic flow which could be accommodated would be limited either by the maximum lockage rate or by the rate at which the intervening pools themselves would allow the tows to reach the locks. In the report of the district engineer on the "stub-end" canal (1933), the following are listed as the more important factors affecting the capacity of any waterway:

1. Number of days a year during which navigation is interrupted by natural causes.
2. Dimensions and alignments of channels.
3. Lockage and tonnage capacity of locks.
4. Suitability of terminal and transfer facilities and turning basins.
5. Number and clearance of bridges.
6. Length of pools.
7. Dependability of navigation service on the waterway.
8. Traffic characteristics, such as:
   a. Tow formations.
   b. Type and size of vessels.
   c. Towing speeds.
   d. Traffic distribution throughout length of the waterway.
   e. Commodities moved.
   f. Balanced or unbalanced haul.
   g. Type of carrier service (public or private).
   h. Seasonal and other variations in density.
   i. Degree of regulation, if any.[8]

The following estimates of physical capacity of the proposed canal have been published:

| | |
|---|---|
| District Engineer (Army)..... | 44,000,000 tons |
| Upper Ohio Valley Association.... | 22,000,000 tons |
| Coverdale and Colpitts (1935).... | 16,000,000 tons to 20,000,000 tons* |

* Upper Ohio Valley Association, *Economic Aspects, etc., op. cit.*, pp. 21–2.

The engineer's estimate is for both directions, with fully loaded barges, continuous operation of locks (24 hours each day, 240 days a season), with tows con-

[7] Backert, A. O., ed., *The ABC of Iron and Steel* (Cleveland: Penton Publishing Co., 1925), 5th ed., pp. 5–10.

[8] U. S. Congress, 73rd Sess., House Doc. 277, p. 92.

tinuously available for lockage. The engineer calls this "an ideal rather than a practical condition." The estimate of the Upper Ohio Valley Association has no foundation; it is based on careless use and false interpretation of figures taken from the report of the district engineer on the "stub-end" canal. No information is at hand concerning the method employed by Coverdale and Colpitts.

The estimate of physical capacity of the canal developed in this article is an estimate of the limiting effects on the maximum theoretical capacity of (1) the length of the navigation season, (2) the tonnage capacity of the locks, (3) the characteristics of the channels, (4) the characteristics of the traffic, and (5) the probability of fully loaded barges and maximum-sized tows.

Both opponents and proponents have accepted 240 days as the length of the navigation season of the whole canal. Coverdale and Colpitts estimated the season to be 216 days, but the basis for the estimate is not at hand. On the Beaver and Mahoning rivers it has been estimated that navigation might be carried on 315 days a year. These figures include the effects of ice, fog, storms, and high winds.

With reference to lockage and tonnage capacity of locks, time studies of the Monongahela, with traffic similar to that expected on the canal except that it is almost completely unbalanced, indicate that with all other conditions favorable, 30-minute lockages in daylight and 40-minute lockages at night may be possible.[9]

The number of tons that could be carried past the dam in each lockage is affected by the characteristics of the channels, as they limit the availability of tows. The Beaver and Mahoning rivers, including the eight-mile bottle neck at Youngstown (200 foot channel) would cause a certain amount of congestion. The two rivers are narrow, tortuous, steep, deficient in water, without natural channels which could accommodate modern barge navigation.[10] (The velocity of water flow in these channels would be about 2.73 miles per hour, a further limiting factor.) It can reasonably be estimated that the minimum loss of time would be equivalent to two hours each day. In 22 hours, 12 of daylight and 10 at night, 39 lockages could be completed.

As the traffic expected is largely for steel companies in the area, it has been assumed that the tonnage will be moved by private carrier. It can reasonably be assumed, therefore, that tows will be available when required, and the question of dependability of service (a possible limiting factor when the shipper depends on public carriers) is thus eliminated. Bulk commodities are expected to be practically the only traffic and will be carried in open barges. A bridge clearance of 27 feet will permit tows of six barges which can pass with the tow-boat through the double-chamber locks in a single lockage. The maximum load of a tow is expected to be 5,000 tons. With fully loaded barges, the tonnage capacity of a lock on the canal is estimated to be 195,000 tons per 24 hours.

Tows cannot reasonably be expected to arrive at exactly the correct interval to permit operation of the locks at full capacity. Congestion, breakdown of tow-

[9] See discussion in Upper Ohio Valley Association, *Economic Aspects, etc., op. cit.*, pp. 12–3. Also U. S. Congress, 73rd Sess., House Doc. 277, p. 101: "The many restrictive features of the latter [Beaver and Mahoning channels] would require the most careful navigation even under the most favorable conditions of traffic distribution, visibility, channel velocity, and wind. Serious doubts even arise as to whether night towing on the relatively narrow, winding channels would be entirely practicable under otherwise favorable conditions."

[10] *Ibid.*, p. 81.

ing equipment, or accidents cannot be avoided. On the Monongahela at old Lock Number 4, similar to locks on the proposed canal because of the scheduled traffic, the ratio of maximum to average daily capacity was 1.64 to 1 (or 62.5%) in 1929. Records of lockage time show that even on days of maximum available traffic the regulatory effect of congestion at the locks was not sufficient to smooth out the peaks of the daily traffic-density curve. The resulting short idle periods totalled, on the average day, 4.1 hours, causing nearly ½ the 37.5% deficiency of average daily to maximum capacity. The balance of the deficiency may properly be attributed to the fact that under either ordinary or maximum traffic conditions, as experienced on local rivers, the tows do not reach the locks at a uniform rate throughout the day. This lack of uniformity in traffic flow is caused primarily by the run-of-river distribution of traffic throughout the day, which is independent of delays to tows resulting from congestion.[11] The district engineer in the report on the "stub-end" canal estimated the ratio of maximum to average daily capacity at 3 to 1 (or 33.3%); of this, 14.2% of maximum capacity would be lost because of the shorter season. Elimination of the latter gives a practical capacity of 47.5%. Because the part of the canal with the poorest operating conditions limits the capacity of the whole canal, this figure may be considered the ratio of practical to maximum capacity of the entire proposed Ohio River-Lake Erie canal.

The 15% differential in capacity between the canal and the Monongahela seems justified by certain conditions, most of which are not present on the Monongahela. In a 200-foot channel the passing of tows would be possible only at reduced speed. Bridge clearance would be lower on the canal, thus further reducing speed. Short pools, particularly at the Lake Erie end, would tend to increase congestion and reduce capacity. Time must also be taken out for maintenance and repair of locks, and the presence of dredging equipment would limit capacity in some congested areas. Use of the locks by pleasure and other non-commercial craft would further reduce the total volume carried. Finally, maneuvering at terminals would cause some congestion, for it is not economical to provide sufficient space within proposed terminal basins to permit all terminal maneuvers entirely outside the channel limits.

Therefore, acceptance of 47.5% as a reasonable ratio of practical to maximum capacity would mean a practical capacity of 92,625 tons per day for the canal. The annual capacity of the entire canal in a 240-day season would be 22,230,000 tons; of the Beaver-Mahoning section in a 315-day season, 29,180,000 tons.

In this figure is included an assumption that all barges would be fully loaded (833 tons per barge) and that all lockages will be of tows of the maximum six barges each. Experience on the Monongahela indicates that this theoretical condition is not likely to exist. In the 10 years from 1921 to 1930, traffic on the Monongahela was 46.8% of this theoretical capacity. The portion of the 53.2% deficiency that can be attributed to the impracticability of fully loading all barges and of having six barges in every tow can only be estimated. For the proposed canal a reasonable estimate of the ratio of actual tonnage per tow to theoretical capacity is 90% on the whole canal and 85% on the Beaver-Mahoning section (more of the traffic on the latter part would probably be carried by public carriers). Therefore, the physical capac-

[11] *Ibid.*, pp. 100–1.

ity of the canal would be as follows:

| | |
|---|---|
| Beaver to Lake Erie | 20,000,000 tons |
| Beaver to Youngstown | 25,000,000 tons |

These figures can be checked against operation on the Monongahela. With a completely unbalanced traffic (compared with a 40–60 balance on the canal) offsetting the much more unfavorable operating conditions on the canal, a volume of 23,000,000 tons was handled in 1929.

Of the 30,890,000 tons of traffic available, 88% or 27,180,000 tons must pass through the Youngstown bottle neck. But the physical capacity of the canal is but 20,000,000 tons; hence only 20 of the 27 million tons available could be handled. Assuming the 3,710,000 tons of Beaver-Mahoning rivers traffic to be spread evenly through the season, an additional 890,000 tons could be moved on this part of the canal while the rest is closed, since navigation on the lower part is 24% longer than on the upper. Therefore, of the available annual traffic only 20,890,000 tons could be carried on the proposed canal.

*Transportation Saving.* The amount of transportation saving is determined by the railroad rates on the available traffic by water. Both railroad rates and expenses of canal transportation are those of a single period; the recent rail freight-rate increase is assumed to be offset in increased costs of moving the canal traffic. Savings on traffic on other waterways which will move because of the canal are assumed to equal the annual charges on the additional equipment on the other waterways necessary to handle the new traffic; hence the savings are not credited to the canal. As the item is relatively small, the correctness of this assumption is of little importance. Costs of water transportation are those expenses which a shipper would incur in moving his traffic, including cost of operating the transportation equipment, return on investment in the equipment, cost of loading and unloading the barges. The costs do not include expenses borne by the government or other interests in connection with the canal. The estimates of both the engineer and the railroads are based on a volume of traffic as estimated by the engineer (30,890,000 tons).

The following are the estimates of transportation savings (before credit for back-haul) presented by the district engineer and by the railroads:

| Item | District Engineer | Railroads |
|---|---|---|
| Iron ore | $ 3,497,000 | $1,902,000 |
| Limestone | 939,000 | 74,000 |
| Lake cargo coal | 2,954,000 | 1,761,000 |
| Lake fuel coal | 92,000 | 89,000 |
| Commercial and industrial coal: | | |
| Ex rail | 3,492,000 | 2,622,000 |
| To lake cities | 1,652,000 | 51,000 |
| To Beaver Falls | 3,000 | 4,000 |
| | $12,629,000 | $6,503,000 |

By giving credit for additional savings which would result from back-haul at the ratio estimated by the district engineer, these transportation savings would be:

| | |
|---|---|
| District engineer's estimate | $16,952,000 |
| Railroads' estimate | 8,541,000 |

The estimate of the district engineer has been revised by the Army division engineer to $12,950,000–$13,910,000.

The wide variation between these two estimates arises from a number of factors. The railroads state that ton-mile cost would be 6 mills instead of 5.5 mills, because they estimate the pool speed at 3.5 miles per hour on the canal and 4.5 on the Grand River reservoir, instead of 4 and 5 miles, respectively. Coverdale and Colpitts expressed the opinion that the average speed in the pools of the canal would not be over 3.5

miles per hour.[12] The railroads also estimate the lockage time to be longer than the engineer's estimate on the basis of a study of Monongahela records. Application of these figures can be questioned on the basis of use of more modern locks and newer types of operating machinery.

The railroads estimate cost of water transportation on the Ohio River at 4 mills rather than 3 mills per ton-mile. The latter figure is based on the assumption that 10-barge tows will be used on the Ohio. But since the length of haul on the Ohio River of the traffic originating on the canal would average about 25 miles, the railroads claim that the cost of reforming tows would lead to use of six-barge tows for this haul on the Ohio River.

The railroads claim that insufficient allowance for degradation of coal has been made because of some additional handling overlooked by the engineer. In regard to distribution, the railroads suggest certain costs omitted by the engineer: an additional 38¢ per ton on coal to be moved over the Lakes from Lake Erie docks to industrial concerns, and 7¢ per ton additional for coal to industrial plants now prepared to receive coal by rail. A further claim is made that the cost to the receiver of unloading freight cars is 3¢ per ton, not 8¢, which is the tariff rate for unloading lake cargo coal into vessels. Both the railroads and the engineer agree on 10¢ per ton as the barge-unloading cost. The engineer estimates lake charges at 15¢ per ton plus 10¢ for unloading (1935). The railroads state the 1932 charges were 30¢ (east of Sandusky to Detroit) plus 45¢ to 60¢ charge for unloading, weighing, and dock expenses. In the railroad estimate, lake charges are estimated at 25¢ and 10¢ for unloading.

[12] Upper Ohio Valley Association, *Economic Aspects, etc., op. cit.*, p. 12.

In addition, another criticism can reasonably be made of the estimates. The railroad estimate of savings includes deductions for items on which the water cost is higher than the rail rate. If such a situation exists, the traffic will not move, and the total savings on other traffic will not be reduced. With application of back-haul credit, the item amounts to $432,000 which would indicate a saving of $8,973,000 on the other traffic, according to the railroad estimate.

Some of these criticisms of the engineer's estimate are correct in principle, as has been indicated, although the extent of additional cost in each instance may be overstated. The actual transportation savings which will accrue will probably fall between the revised estimates of the Army engineers ($12,950,000–$13,910,000) and that of the railroads ($8,973,000). In view of the validity of the criticisms presented by the railroads, $10,000,000 may be considered a reasonable estimate of the transportation savings which would result from the canal.

However, this $10,000,000 will be saved only if 30,890,000 tons of traffic are moved. The physical capacity of the canal would be but 20,890,000 tons, or 67.6% of the traffic available. Assuming that, with the reduced volume, less shipping equipment would be in service and that part remaining would be as efficiently used as originally estimated, and assuming further that the reduced volume would involve the same rate of saving per ton-mile, the total transportation savings would be $6,750,000. This saving would accrue to the shippers using the canal.

### *B. Economic Savings*

The net economic savings that would accrue from the canal are the transpor-

tation savings less any additional expenses incurred in providing the means of transportation. The net savings are also affected by possible tax losses, incidental flood-control benefits, and probable effect of rail rates on the traffic of the canal area. Other effects, more difficult to trace, are those on employment and output in the section and in the nation.

*Construction Cost.* The following estimates of the construction cost of the proposed waterway have been published:

| | |
|---|---|
| U. S. District Engineer | $162,718,000* |
| U. S. Division Engineer | 179,000,000† |
| Railroads | 212,027,000* |

* Upper Ohio Valley Association, *Economic Aspects, etc., op. cit.*, p. 2.

† *The News-Tribune*, Beaver Falls, Pa., October 22, 1937, article by Joseph A. Loftus, based on excerpts of the U. S. Army District Engineer's report.

The estimate of the division engineer, a revision of the district engineer's estimate, probably includes an additional provision for interest during construction.

Of these figures, $27,000,000 is to be paid by local governments for land drainages and flowage rights.

The difference between the estimate of the district engineer and that of the railroads is accounted for by a number of items omitted by the former. The engineer omitted the cost of interest during construction. This item is a part of the total cost of the project; the additional interest cost is estimated to be $15,000,000 (estimated construction cost $200,000,000; construction period 5 years, interest rate 3%). It is asserted that the cost incurred in changing railroad facilities has been underestimated by $15,000,000. The engineer provided a freeboard (distance between high-water level and tracks) of seven feet and the railroads claim nine feet is necessary. The railroad estimate may include, besides, a higher cost of relocating Pennsylvania Railroad's Pittsburgh, Youngstown and Ashtabula division, and allowances for increased maintenance charges involved in the "green" roadbed. These claims are valid; however, it is advisable to revise the added cost to $10,000,000, since the $15,000,000 is the railroads' own estimate and may be affected by a tendency to overstate the costs involved.

The engineer allowed $6,610,000 for construction of a harbor on Lake Erie but did not include the cost of terminal facilities which must be erected. The latter was estimated by Colonel Kutz, a United States Army Engineer, in a 1925 report to be $7,564,000. The engineer also made no specific allowance for the cost of floating-dredge equipment, but it can be assumed with some justification that such cost was included in the annual maintenance charges embraced in operating costs. Terminal facilities must be constructed whether by local communities or by the shippers. No estimate was included by the engineer. The Youngstown Sheet and Tube Company has submitted various estimates ranging from $327,000 to $710,000 for one private terminal. The railroads included $2,000,000 for the cost of "loading and unloading facilities." No estimate has been made of the cost of harbors outside the channels that must be dredged. The railroads claim additional expense will be incurred in preventing seepage in the Grand River reservoir; the expenditure depends on the validity of the railroads' assertion that the Grand River terrain is porous.

The cost of providing a reserve water supply in the Cuyahoga basin to assure navigable conditions in the summit-level pool has not been included by the engineer. The railroads quoted the engineer in asserting the need for the reserve but made no estimate of its cost. The railroads include $5,907,000 as the cost of additional equipment necessary on the upper Monongahela River to handle the traffic included in the engineer's esti-

mate of traffic available. This is incorrect as the transportation savings resulting from operation on the Monongahela have not been included in the estimate of canal savings, nor has the installation of new equipment on the Monongahela been credited with savings that may then be possible on traffic which will not move on the canal. Since no estimate of these savings is available and there is no way to judge the dependability of the estimated cost of additional equipment, the item is not considered further in this article.

By eliminating from the railroad cost-estimate the excess provision for relocation of rail facilities and the allotments for additional Monongahela facilities and floating-dredge equipment, the total cost of the canal would be $200,000,000. In view of the estimates of the Army engineers and the justice of the other additions suggested by the railroads, this estimate is conservative and reasonable.

*Annual Charges.* The following estimates of annual charges, not including expenses incurred by the shipper, have been submitted:

| | |
|---|---|
| U. S. District Engineer | $ 8,722,000* |
| U. S. Division Engineer | 10,484,000† |
| Railroads | 10,694,000* |

* Upper Ohio Valley Association, *Economic Aspects, etc., op. cit.*, p. 2.

† *The News-Tribune*, Beaver Falls, Pa., October 19, 1937, article based on excerpts of the U. S. Army District Engineer's report.

The railroad estimate is based on that of the district engineer, to which is added the carrying charges on the additional construction cost ($49,309,000 by their estimate) at 4%. The division engineer's report revised the smaller figure to include obsolescence and maintenance, operation costs of $1,145,000, interest at 3%, and the interest charges on the additional construction cost ($16,282,000). No information is available upon which to judge the probable accuracy of the engineer's estimates and, as they are accepted by the opponents of the canal with the exception of the interest on the additional construction cost, they are assumed to be reasonable and accurate estimates. However, the construction cost of the canal has been found to be $200,000,000 instead of $179,000,000, as estimated by the division engineer. The interest on the additional $21,000,000 at 3% must be added to the engineer's estimate, making the estimated annual charges likely to be incurred by the canal project $11,114,000 or, in round numbers, $11,100,000. Because a large part of this annual cost is interest and obsolescence and maintenance expenses and will be affected only slightly by variations in volume of traffic, it is reasonable to estimate the annual charges, considering the physical capacity limits of the canal, to be $11,000,000.

A provisional net saving can be determined by deducting annual charges from transportation savings. The savings based on the estimates of the division engineer would be $2,466,000 to $3,426,000 annually; on the basis of railroad estimates, a net annual loss of $4,191,000, plus estimated tax losses, would accrue. A "provisional" net loss is indicated by the conclusions reached in this article. On the basis of traffic available for the canal, a loss of $1,100,000 would accrue (annual charges of $11,100,000 less transportation saving of $10,000,000). On the basis of physical capacity of the canal, the net loss would total $4,250,000 ($11,000,000 charges less $6,750,000 transportation saving).

*Other Charges and Savings.* These estimates are termed "provisional" because several other factors would affect the net economic loss or gain.

(*1*) *Tax Losses.* Reduced railroad revenue and inundation of tax-paying land in the Grand River reservoir would result in tax losses. Diversion of the avail-

able traffic from the railroads would reduce railroad revenue $39,189,500 according to railroad estimates. The federal income tax paid by railroads, figured on a 15.75% basis, would decrease $1,851,704. This indicates a net income loss of $11,776,406, or 30% of the revenue loss. This tax loss would not occur if the railroads did not have a net income before loss of the traffic, but because the statistics used by the engineer are all on a 1929 basis and because many of the roads involved (the "coal roads") operate continuously at a profit, the estimated tax loss is accepted. To offset this loss, the taxable net income of the shippers would be increased. As most of the traffic would be carried by private carriers owned by steel or coal companies, the transportation savings would very probably increase their net income the full extent in a period similar to 1929. Figured at the same rate, the transportation savings would provide tax income of $1,575,000. The Federal Government would suffer a net tax loss, therefore, of $276,704.

However, the physical capacity of the canal would not permit movement of the available traffic, and the loss in railroad revenue will be smaller as would the transportation savings. Assuming that the limited volume of traffic will be of the same average net income per ton value to the railroads, revenue loss will be $26,492,000, with income tax reduced to $1,252,000. Transportation savings will increase the shippers' net income $6,750,000 and will increase the tax income to the Government $1,063,000. The net tax loss to the Federal Government would thus be $189,000.

Losses to state governments of Ohio and Pennsylvania in taxes on gross intrastate revenue are estimated by the railroads at $1,884 for Pennsylvania and $91,824 for Ohio. These figures apply when all available traffic is moving. Corrected for limitations of the physical capacity of the canal and assuming the reduced traffic will include the same proportion of intrastate business, these losses would be $1,274 and $62,073 respectively.

The tax losses on land flooded in Ashtabula and Trumbull Counties, Ohio, would total $67,249. The Grand River reservoir will submerge parts of Austinburg, Mechanicsville, Eaglesville, East Trumbull, Rock Creek, Windsor, Mesopotamia, and Farmington, together with three public schools, eight churches, 17 cemeteries, waterworks at Jefferson, townhalls at Windsor and Austinburg, and the Grand River Institute at Austinburg. The estimate of annual tax loss appears to be justified. No tax loss would occur from retirement of railroad facilities. Mr. F. E. Williamson, president of the New York Central System, testified at the Army Board hearings that

"the construction of the waterway would not permit abandonment of the railroad facilities, which would have to be sufficient to take care of the peak requirements of traffic movement during the winter months."[13]

Total tax losses, therefore, would be:

| | Traffic Basis | |
|---|---|---|
| | Available | Capacity |
| Federal income tax..... | $276,704 | $189,000 |
| State revenue tax: | | |
| Pennsylvania..... | 1,884 | 1,274 |
| Ohio..... | 91,824 | 62,073 |
| County, etc., land tax.... | 67,249 | 67,249 |
| Total..... | $437,661 | $319,596 |

(2) *Additional Costs to Shippers.* Certain additional expenses will be incurred by the shippers that use the waterway. Because more time will be required for transportation of the goods by water

[13] Upper Ohio Valley Association, *Case of the Opponents, etc., op. cit.*, p. 9.

than by rail, additional investment in inventories will be necessary. The slower service on the waterway will make the canal less valuable to the shipper than the railroads in time of an emergency in the shipper's business. The service on the waterway will not be as dependable as on railroads; unpredictable limiting factors (such as wind, storms, high water) will prevent operation of tows on schedule. Because the canal cannot be used during the whole year, shippers must maintain both dock and freight-yard facilities to meet all transportation needs. These factors will all be items of additional expense to those who use the facilities of the canal; however, there is no way to estimate the extent of such expense.

(*3*) *Flood Control.* The report of the district engineer estimates the flood-control benefits of the proposed canal at $275,000 annually.

"Under the proposed plan . . . 'control of practically all floods in the densely populated and industrially developed Mahoning valley would be effected by diverting the flood flows of the upper Mahoning river above Youngstown, Ohio, into the proposed Grand River reservoir. . . . [It] would also result in the alleviation of floods in the Beaver River valley and in the upper Ohio River valley.' "[14]

This is not included in the engineer's estimate of annual savings. Since a proposal for the construction of a $3,400,000 reservoir for this purpose is under consideration by the Federal Government and assuming the engineer's estimate to be correct, it is proper to include the $275,000 in total savings of the waterway.

(*4*) *National Defense.* Some proponents of the canal argue that it will be of value in moving traffic in times of national emergency when the railroads are congested. However, the annual capacity of the canal is but some 20,000,000 tons, whereas the capacity of the railroads in the Pittsburgh-Youngstown traffic area is as follows:

| | Annual Capacity |
|---|---|
| Pennsylvania (PY&A Div.) | 50,000,000 tons |
| Pittsburgh & Lake Erie | 70,000,000 tons |
| Baltimore & Ohio | 52,000,000 tons |
| Bessemer and Lake Erie | 55,000,000 tons |
| Total | 227,000,000 tons* |

* U. S. Congress, 73rd Sess., House Doc. 277, p. 33.

Construction of the canal would increase the transportation capacity between Pittsburgh and Youngstown 9%. Since the non-utilized capacity of some of these lines in a normal year is as large as 75%,[15] construction of the canal from the point of view of national defense should be regarded as unimportant.[16]

(*5*) *Rail-Rate Reduction.* Transportation charges were an important factor in the establishment and growth of the iron and steel industry in Youngstown. Prior to 1913, rail rates were such that the assembling costs of ore, coke, and limestone were practically the same at Pittsburgh, Youngstown, Wheeling, and on the Great Lakes front. As a result of doubling of freight rates and replacing beehive oven coke (largely from Connellsville) by coke from by-product ovens located at the blast furnaces and steel plants, the old parity has been upset and the Youngstown cost of producing a ton of steel has probably risen about $2.00 per ton over that of other districts.[17] This disadvantage has led to the

[14] *The News-Tribune*, Beaver Falls, Pa., October 21, 1937, article based on excerpts of the U. S. Army District Engineer's report.

[15] U. S. Cong., 73rd Sess., House Doc. 277, p. 33.

[16] In regard to non-utilized capacity of the railroads, the proposed canal is similar to other projects to increase the total transportation capacity when present capacity is not being used. This condition emphasizes the necessity of economic justification before such a project should be approved.

[17] U. S. Congress, 73rd Sess., House Doc. 277, p. 63.

enthusiasm in the Youngstown area for the Ohio River-Lake Erie Canal.

However, net savings must accrue from the canal project to the whole country, or the construction will be a form of subsidy to the steelmakers using the canal facilities.[18] In addition, the lower cost to the shipper of moving traffic on the canal may lead to a railroad freight-rate reduction on the bulk items involved. The overcapacity of the roads emphasizes the likelihood of such a move. If a rate decrease follows, the Pittsburgh and lake-front companies may possibly demand and obtain rates with the same differentials with reference to the Youngstown district as existed before the canal construction. Youngstown would not be aided; all steel manufacturers would be receiving higher profits or selling steel at lower prices; the railroads would be receiving less operating income.

No savings would accrue from the reduction of transportation cost to shippers unless one or both of two conditions resulted—namely, (1) the transportation savings from use of the canal would exceed the expenses and losses incurred in its operation; or (2) the reduction of transportation costs to this district would result in an increased volume of iron and steel production, and the railroads would gain earnings equal to present earnings plus the excess of expenses and losses of the canal operation over the transportation savings. Since these expenses and losses would exceed transportation savings, as is indicated below, the stimulation of the Youngstown industries by lower transportation rates would be easier to effect without the economic loss of the canal construction, because the railroads would not have to earn enough to offset the net loss of the canal and the 20,000,000 tons of canal traffic would move over the railroads and contribute an increment share to railroad earnings.

The problem then involves the increased demand for transportation which might result from lower transportation rates; the effect of such a rate change on railroad earnings; and the possibility of reducing rates to the Youngstown area and not those to other steel-producing districts. The problem is clearly one of railroad rate structure and is not within the scope of this article.

However, some important factors are involved which relate to this problem and which should be recognized. (1) Railroad net earnings will be adversely affected if the traffic is lost to the waterways or if it is retained by sharp reductions in railroad rates. If railroad service is to be maintained in the long run, the total traffic volume must be stimulated by lower rates to the extent that railroad net earnings are returned to profitable levels. It is doubtful that such a situation would develop. Further, if production in this area is stimulated only at the expense of the rest of the country, the lower transportation rates in this district will not result in a net gain to the whole country.

(2) If the railroads, after construction of the canal, are simply going to cut rates and keep the traffic, it would be a wiser social policy not to build the canal at all but merely to require the railroads to make the rate reduction which they would have been forced to make had the canal been constructed. Such a requirement might be legally possible through a proper order of the Interstate Commerce Commission.

(3) The railroads in the district have usually been able to earn a fair return on their investment, and are able to

[18] A limited number of steel companies other than those in Youngstown could receive smaller benefits. It should be further noted that proponents of the canal have not suggested that the steel companies using the canal bear the annual costs by paying toll charges.

handle all the traffic available. Without the bulk traffic which the canal would take from the railroads, the latter could not earn a fair return on their investment. The canal can only carry the bulk commodities for which there is no necessity for speed, but could not handle the balance of traffic in the district. Therefore, if the balance of traffic is to be carried, the railroads must either be subsidized or must charge higher rates on the traffic to enable them to earn enough to maintain their facilities and service.

(4) The existing railroad capacity from a social standpoint represents a sunk cost, whereas the overhead and other fixed costs of the waterway have not yet been incurred and hence are not sunk costs. Therefore, to justify the waterway it is necessary that the transportation saving (as referred to previously) cover the total annual cost of the canal and of its use and yet be less than the purely variable costs associated with using the fixed capacity of the railroads.

Although these factors cannot be evaluated in dollars and cents, they are important and all support the view that the net economic gain that can be estimated should be definitely favorable to the canal if its construction is justified.

*Net Economic Loss.* The annual profit and loss statement of the canal would be, in summary, as follows:

| | Traffic Basis | |
|---|---|---|
| | Available | Capacity |
| Transportation savings | +$10,000,000 | +$ 6,750,000 |
| Additional costs to shipper | — | — |
| Annual charges | − 11,100,000 | − 11,000,000 |
| Net tax losses | −437,661 | −319,596 |
| Flood control | +275,000 | +275,000 |
| National defense | 0 | 0 |
| Rail-rate reduction | 0 | 0 |
| Totals | −$ 1,262,661 | −$ 4,294,596 |

If all available traffic could be moved, the annual net economic loss of the proposed canal would be $1,260,000. However, it has been shown that the canal could not handle that volume of traffic; operation of the canal at physical capacity would result in an annual economic loss of $4,290,000.

### *C. Incidence of the Loss*

The net economic loss would not be borne by users of the canal. The transportation savings would accrue to the shippers and the expenses would be paid by the taxpayers.

It has been assumed that practically all canal traffic would be carried by private carriers owned chiefly by steel companies. This is probably correct in regard to the two large steel corporations at Campbell and Struthers, Ohio, because of their expressed intentions and because the additional income from the savings estimated by either the railroads or the Army engineer plus the 6% return on investment in towing equipment (included in operating cost estimates) is attractive. The corporations are financially able to purchase the necessary equipment and would, of course, control their own traffic.

Operation of public carriers would be probable only if the rates by canal were enough lower than rail rates to induce shippers to forego the speed and better service offered by the railroads. The shipper who does not have sufficient volume of traffic to justify operation of his own equipment will be more difficult to persuade to ship by way of the canal than the large shipper with his own equipment who is able to schedule capacity shipments by canal for his own convenience and at considerable savings, even though the transportation cost is but 10% lower than rail rates in some instances. Water rates for public carriers are usually 20% below rail rates. Operators of public carriers expect a manage-

ment profit in addition to the 6% return on investment in equipment. This has not been included as an expense in the estimate of transportation savings.

In Table I the volume of traffic available to public carriers when charging rates 20% below rail rates has been determined according to the district engineer's and the railroads' estimates of savings. Traffic at Struthers and Campbell, Ohio, is not included. From the engineer's estimates, 9,230,000 tons (30% of total traffic) would be available to public carriers with opportunities of earning $994,250—if the traffic would move on the canal at a 20% differential. Based on savings estimated by the railroads, the corresponding figures would be 2,430,000 tons (7.9% of total traffic) available, with opportunities to earn $494,550. Probably some shippers who do not operate their own canal equipment and whose traffic the public carriers cannot handle at rates 20% below rail rates will continue shipping by rail. This will decrease the estimate of traffic available and, with the added item of management profit expected by public carriers, will decrease the estimate of transportation savings. In view of the nature of the commodities that would be carried on the canal and of the small number and financial ability of the major shippers, it is fair to conclude that a large part of the traffic would be carried by private carriers, and that the transportation savings would accrue to the owners of those carriers.

The owners of the carriers would be the large shippers, principally the steel companies. If the transportation savings accrue to the steel companies in the

TABLE I. TRAFFIC AVAILABLE TO PUBLIC CARRIERS*
(Struthers and Campbell Excluded)

| Origin | Destination | Tons (000 Omitted) | Savings per Ton | | Total Savings | |
|---|---|---|---|---|---|---|
| | | | Engineer | Railroads | Engineer | Railroads |
| *Iron Ore* | | | | | | |
| Lake Erie | Lowellville | 300 | 2¢ | | $ 6,000 | |
| | Youngstown | 290 | 7 | 2¢ | 20,300 | $ 5,800 |
| | Warren | 430 | 14 | 11 | 60,200 | 47,300 |
| *Lake Cargo Coal* | | | | | | |
| Ohio No. 8 | Lake Erie | 5,000 | 1 | | 50,000 | |
| *Lake Fuel Coal* | | | | | | |
| Ohio No. 8 | Lake Erie | 75 | 34 | 27 | 25,500 | 20,250 |
| Fairmont | Lake Erie | 75 | 3 | 1 | 2,250 | 750 |
| *Commercial Coal* | | | | | | |
| Ohio No. 8 | Detroit | 500 | 8 | | 40,000 | |
| Ohio No. 8 | Buffalo | 500 | 31 | | 155,000 | |
| Fairmont | Buffalo | 500 | 10 | | 50,000 | |
| *Commercial Coal—Industrial* | | | | | | |
| Pittsburgh District | Beaver Falls | 55 | | 4 | | 2,200 |
| Conway-Colona | Wampum | 75 | 54 | 47 | 40,500 | 35,250 |
| | Hillsville | 100 | 32 | 31 | 32,000 | 31,000 |
| | Lowellville | 170 | 55 | 37 | 93,500 | 62,900 |
| | Youngstown | 410 | 40 | 31 | 164,000 | 127,100 |
| | Warren | 600 | 34 | 23 | 204,000 | 138,000 |
| | Warren (dom.) | 150 | 34 | 16 | 51,000 | 24,000 |
| Total Savings | | | | | $994,250 | $494,550 |
| Tons Available | | | | | 9,230,000 | 2,430,000 |

* Rate charged: 80% of rail rate. Where costs by water exceed that figure, tonnage is not included.

canal area, the public might be benefited by the lower costs passed on to it in lower prices. But this is not likely. The steel industry is notorious for its fixed prices throughout the country. The transportation savings will not be passed to the consuming public but will increase the profit of these steel corporations. In other words, construction and operation of the canal would be an indirect subsidy to the steel companies using the canal.

The expenses of the canal, other than the expense of operation of the tows (included in computation of transportation savings), would be borne indirectly by the railroads and directly by the taxpayer. The reduced traffic on the railroads will result in lower railroad profits. In relation to the public, taxes would be increased to meet the annual charges and to replace the tax loss less the annual benefits from flood control. Costs to the taxpayer are greater than the transportation savings; actual annual costs will be $11,320,000, actual annual transportation savings $7,025,000. Therefore, construction and operation of the canal would not only subsidize the profits of certain steel corporations, but would subsidize them with dollars costing the taxpayer $1.61 apiece.

*Summary*

The proposed Ohio River-Lake Erie Canal should not be built because (1) it would result in an economic loss; (2) it is a costly means of subsidy to certain steel corporations at the expense of the taxpayers; and (3) if there is an economic solution to the problem of the Youngstown area, the problem can be solved on an economic basis only by railroad rate changes.

# The Economic Status of Isolated Settlers in the Cut-Over Area of Wisconsin

*By* GEORGE S. WEHRWEIN*

PROGRAMS for the relocation of isolated settlers, and especially non-conforming land users, in the zoned areas and Federal Forest Purchase areas were started in Wisconsin in the fall of 1933, when the Subsistence Homesteads Division of the Department of the Interior announced its policy of relocating stranded agricultural settlers to communities where work could be obtained in part-time employment in non-agricultural occupations.[1] Since the Federal Forest Service could use part-time workers, it was believed that "subsistence homesteads" afforded an opportunity to supply the Service with forest workers and at the same time remove "high-cost" settlers and those living on submarginal land to better locations. Within a month after this policy was announced, a project was submitted to the Division and $750,000 was allotted to the Wisconsin Forest-Farm Homesteads Corporation, but in 1934 changes in the administrative policy of the Department of the Interior liquidated the project before the Corporation could get started with the field aspects of its program. Nevertheless, some tangible results flowed from this venture, some of which will be discussed in this article.[2]

In the first place, the project aroused great interest, not only in northern but also in southern Wisconsin as well as in the cities, among people who hoped to get a "homestead." However, the Corporation announced its plan to consider only the non-conforming users living in the restricted areas of zoned counties, and settlers residing in federal forest-purchase areas. Only two counties had zoned their lands at the time the policies were announced, but in 1934 nine others speedily followed the example of Oneida and Vilas. It is more than probable that the policy of restricting the program to non-conforming users and zoned counties was an added impetus to the zoning movement in the northern counties.

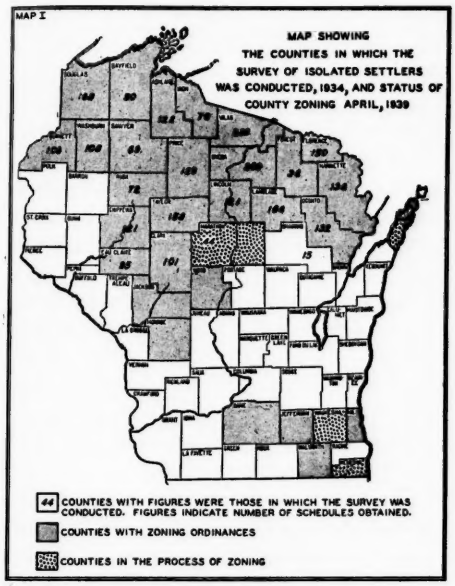
In the second place, a study of the isolated settlers was immediately undertaken in order to get the necessary data for the relocation program. For instance, it was desirable to know how many families had members capable of working in the forests, because the Corporation had announced that only such families would be considered eligible for a "subsistence homestead." It was also important to know how many settlers would accept the opportunity if offered to them. Many other facts were needed to plan an intelligent relocation project. Enumerators were sent into 23 northern Wisconsin counties to visit all settlers in the federal purchase areas, all non-conforming users in the restricted districts of zoned counties, and "isolated settlers" in all other areas. Isolated settlers were defined as those who lived farthest from markets and at some distance from distinctly compact settled communities. Since the enumeration had to be made in January and February of

* Professor of Agricultural Economics, University of Wisconsin.

[1] U. S. Department of the Interior, Division of Subsistence Homesteads, *Circular No. 1*, Nov. 15, 1933, p. 5.

[2] A forest-farm homestead project under the auspices of the Forest Service and the Resettlement Administration has been set up near Drummond in Bayfield County along somewhat the same lines as proposed by the Corporation.

1934 in the dead of winter, it is remarkable that 2,969 schedules were obtained within the time allotted for the survey.[3] The personal visits of the enumerators to almost 3,000 settlers stimulated the interest and hopes of many isolated families in zoning, resettlement, and land-use programs.


MAP I
MAP SHOWING
THE COUNTIES IN WHICH THE
SURVEY OF ISOLATED SETTLERS
WAS CONDUCTED, 1934, AND STATUS OF
COUNTY ZONING APRIL, 1939
44 COUNTIES WITH FIGURES WERE THOSE IN WHICH THE SURVEY WAS CONDUCTED. FIGURES INDICATE NUMBER OF SCHEDULES OBTAINED.
COUNTIES WITH ZONING ORDINANCES
COUNTIES IN THE PROCESS OF ZONING

The data gathered in this investigation are the basis for this discussion, but it should be kept in mind that they do not represent a cross section of the North as a whole. The project purposely omitted the farmers in well settled areas, near markets and community institutions; on the other hand, the figures apply specifically to those most likely to be considered in any resettlement, rehabilitation, or land-purchase program.

[3] The project was under the direction of Noble Clark and George S. Wehrwein, with E. J. Ellingson in charge of supervising the enumerators in the field under a CWA project. Robert F. Spilman directed the tabulation of the data under a CWA project originally, with later support coming from FERA. All tables in this article are based on Spilman's work. The assistance of Noble Clark, Associate Director of the Wisconsin Experiment Station, in the preparation of this article is gratefully acknowledged.

### *The Birthplace of the Settlers*

Thirty-six percent of the isolated settlers were born in states outside of Wisconsin, and 22% in foreign countries. Although 38 states in the Union were represented, most of the settlers were born in states adjoining Wisconsin, the only exception being Kentucky which had contributed more than any other state—namely, 189 heads of families. The other states in order of importance were: Illinois, 187; Minnesota, 134; Michigan, 122; and Iowa, 102 families. It is interesting to find so many families from the other Lake States which are similar to Wisconsin in having vast areas of cut-over lands and which are also "in the market" for settlers. The traditional "westward movement" is seen in the migration of 201 settlers from Indiana, Ohio, and other eastern states, but there seems to have been a "backwash" from the West, indicated by the 67 settlers born in the Dakotas, Kansas, and Nebraska. The farmers from other states tend to congregate in definite areas; for instance, 75% of the Kentuckians are found in three counties and almost ½ of them live in one county. Twenty-six foreign countries had furnished 636 isolated settlers to the North with Germany first, Sweden second, and Poland third. Canada, Norway, Austria, and Finland had contributed fairly large quotas, but no concentration of these nationalities in particular counties was discovered.

### *Tenure Status of Settlers*

Three-fourths of the 2,957 settlers who gave information on this subject were owners-operators with a "stake in the land," and therefore the most stable group. The 264 renters comprised about

9% of the total, and 146 heads of families (or almost 5%) were classed as "caretakers," which means that they were merely residing in some dwelling and taking care of the place for the owner without paying rent. The enumerators found 321 squatters, or 11.1% of all settlers visited. With or without consent of the owner, these families had simply taken possession of a place to live. Since they have no investment in real estate and usually have but little property of any kind, renters, caretakers, and squatters form the most mobile element of the population, yet are among the most difficult families to deal with in a resettlement program. A year's residence in a given locality gives them the status of a legal resident and entitles them to the public services which go with this status whether they own land or not. Public purchase of submarginal land does not necessarily get rid of them; Table I shows that 86 of them were living on publicly owned land, most of it county-owned land.

TABLE I. SUMMARY OF TENURE STATUS OF 321 SQUATTERS IN NORTHERN WISCONSIN COUNTIES

| Tenure Status | Number of Families |
|---|---|
| On privately owned land, with consent of the owner, acting in the capacity of a caretaker but receiving no other compensation, and paying no rent in any form | 11 |
| On privately owned land, is supposed to pay the taxes and keep up the place for the privilege of living on it but does not do so. | 4 |
| On land owned by a relative but paying no rent in any form | 15 |
| On privately owned land, said to be with consent of the owner | 37 |
| On privately owned land but without consent of the owner | 168 |
| On county-owned land | 75 |
| On land in all other types of public ownership | 11 |
| Total Number of Families | 321 |

About ½ were living on land without obtaining consent of the owners, and mere change in ownership might have no effect whatsoever on the cost of the public services caused by these squatters.

In any land-purchase program the most important tenure group is the owner-operators. Having invested money, time, and energy in clearing a piece of land and in establishing a home, they can hardly be expected to move without salvaging what they can of their investment. With this in mind, a special study of the owners was made. The tabulations which follow are based upon only 1,233 selected schedules out of 2,220 for owner-operators. So many of the settlers were part of the recent "back to the land movement" that some of the schedules were almost blank except for the area, price, and description of the farm and gave no data on farm operations and income. Even with the exclusion of almost 1,000 owners from the sample it was astonishing to find that 61 schedules reported neither farm income nor income from other sources for 1933.

The newness of the migration to isolated areas is further indicated by the fact that of the 1,233 settlers whose schedules were summarized and analyzed, no less than 439 or 36% had been on their farms five years or less by 1934, a period which corresponds with the "post-depression years" of 1929–1934. These settlers constitute Group I in the subsequent discussion. The data here presented therefore concern not only the more progressive of the new settlers, but more nearly all those of longer local residence. So significant was the influence of length of residence on the economic and social status of the settlers that this was made the basis of classification used in Table II as well as in subsequent tables in this article. Group II includes all settlers who had resided on their present farms from 6 to 15

TABLE II. SIZE OF FARM AND VALUE OF LAND AND BUILDINGS OF 1,233 OWNER-SETTLERS OF NORTHERN WISCONSIN, 1934

| Group | Years of Residence | Number in Group | Per Cent of Total | Average Size of Farm (Acres) | Estimated Value of | | Assessed Value of Land per Farm | Assessed Value of Improvements per Farm |
|---|---|---|---|---|---|---|---|---|
| | | | | | Main Dwelling | All Other Buildings | | |
| I | 1–5 (1934–1929) | 439 | 35.6% | 67 | $209 | $139 | $369 | $133 |
| II | 6–15 (1934–1919) | 452 | 36.6 | 83 | 481 | 452 | 565 | 220 |
| III | 16–20 (1934–1914) | 187 | 15.2 | 112 | 628 | 736 | 721 | 315 |
| IV | 21+ (Prior to 1914) | 155 | 12.6 | 128 | 772 | 870 | 906 | 428 |
| Total | | 1,233 | 100.0% | 87 | 446 | 455 | 566 | 260 |

years. These, together with Group I, constitute 72% of the entire number and represent the settlers who came to their farms after the World War. Group IV includes the 1/8 of all farmers who settled in the cut-over areas before the opening of the World War in 1914.

### *Length of Residence and Progress of the Settler*

The direct correlation between length of residence and economic progress of the settler is shown in the size of the farms and in the increase in value and area of cleared land. It is significant that those who had been on their farms more than 20 years owned farms averaging 128 acres, whereas those who had been on the land less than 6 years owned only about ½ as much land on the average (Table II). It would be interesting to know whether the older settlers bought larger farms to start with or whether their present holdings are the result of gradual accretions. The increase in the value of buildings and land is another measure of progress. The dwellings of those in Group I were estimated to be worth about $200, whereas those who had been on their farms more than 20 years were judged to be worth over 3½ times as much. In the early stages of farm development the value of the dwelling exceeds that of the other buildings, whereas the reverse is true after 15 years of residence. The greater value of the farm in later years is also attributable to larger total acreage and more cleared land per farm.

Cleared land is the chief basis of farm productivity. Cash crops, food for the family, and a large part of the winter feed for livestock are derived from the crop acres of the farm. Land in the process of clearing contributes varying amounts. Land plowed but not stumped can grow some crops; brushed and logged land is used for pasture or hay; and even woodland and wasteland can be used for grazing. It has been estimated that the value of products from two acres of brushed land or two acres of wild hay is about equal to the products from an acre of cleared and cultivated land.[4]

Table III shows the direct correlation between length of residence, acreage cleared, and farm income. Those who had been on the land less than six years had cleared about 5½ acres per farm and had an average income of $69 from farming operations in 1933; on the other hand, those with 21 or more years of residence had an average income of $284

[4] Wm. A. Hartman, unpublished Ph.D. thesis, University of Wisconsin.

TABLE III. CLEARED ACRES AND AVERAGE FARM INCOME IN TERMS OF YEARS OF RESIDENCE OF 1,233 OWNER-OPERATOR SETTLERS, BY YEARS OF RESIDENCE, 1934

| Group | Number in Group | Years of Residence | Average Number of Cleared Acres per Farm | Average Farm Income | Average Farm Income per Cleared Acre |
|---|---|---|---|---|---|
| I | 439 | 1– 5 | 5.5 | $ 69 | $12.54 |
| II | 452 | 6–15 | 18.0 | 169 | 9.39 |
| III | 187 | 16–20 | 28.8 | 223 | 7.74 |
| IV | 155 | 21+ | 33.3 | 284 | 8.53 |
| Total | 1,233 | | 18.1 | 156 | 8.62 |

per farm, or more than four times as much. For the entire group, every acre of cleared land contributed $8.62 of farm income. This figure ranged from $12.54 per acre in the first group to $7.74 per cleared acre in the third group. These figures are not entirely comparable because the divisor is "cleared acres," whereas the income divided by the acreage consists not only of income from crops, gardens, and livestock on cleared acres, but also from forest products and partly cleared land.

These data not only show the economic progress of settlers, but also give some idea of the money involved in a submarginal land-purchase program or in the abatement of non-conforming land uses. If the settlers were merely paid the assessed value of land and improvements, about $1,000,000 would be needed to purchase the 1,233 farms but, if the estimate of the value of the buildings is correct, more than $1,000,000 would have to be paid for the buildings alone. As a matter of fact, the average price paid during the past three years by the Federal Government for the farms purchased under the resettlement program in northern Wisconsin was about $1,000 per farm.

The significance of cleared acres and crop land for the pioneer farmer is worthy of further consideration. In southern Wisconsin the average farm has almost 62 acres of crop land, in central Wisconsin about 52, whereas in the cut-over counties in only a few cases is the average acreage of land in crops above 30 acres, and in 5 counties is below 20.[5] Since these county figures include well-settled areas, as well as isolated farms, they do not present an adequate picture of the deficiency of crop acres on the more recently settled and more isolated farms. A special tabulation of the data on the farms of 1,898 non-conforming land users in 22 counties indicates that these isolated settlers on the average had less than 15 acres of cleared land and only 8.7 acres of cultivated land in 1935.[6]

The program for rehabilitating agriculture in the cut-over areas includes not only the resettlement of non-conforming users of the "high cost" and "submarginal land," but also provision of assistance to those not involved in a resettlement program. This latter group should be helped to increase the acreage of cleared land per farm in order to augment revenues from the farm itself and to become more independent of outside income or public aids. Unfortunately, various relief programs have drawn labor from the farms to public works to the neglect of improvement of the farm it-

[5] Wisconsin State Planning Board, "The Cut-Over Region of Wisconsin," *Bulletin No. 7*, January, 1939, pp. 41–9.

[6] George S. Wehrwein and J. A. Baker, "Relocation of Non-Conforming Land Users of the Zoned Counties in Wisconsin," 12 *Journal of Land & Public Utility Economics* 248–55 (August, 1936).

self, and the other "government programs" have not been geared to the need of the cut-over area for increased crop production. The result is that in the majority of cases the farmer will be no more self-sustaining as a result of these "relief programs" than he was before. The goal should be 40 to 50 acres of crop land per farm plus a similar acreage in woodland and pasture.[7] Large-scale machinery is now being used to assist farmers in breaking and stumping their wild land at nominal cost in several counties of the state.[8]

### *Sources of Farm Income*

Table IV shows that only 23% of the settlers had any income from forest products, but averaged $81 per farm for for those reporting. It is evident that settlers in the cut-overs cannot expect to "grubstake" themselves to any extent by selling wood products from their own farms. A still smaller proportion reported any income from sale of crops. The number is naturally small for those who had been on their farms a short time, but the proportion does not go up appreciably after the first 15 years of residence. This indicates a more or less self-sufficient economy, and also that crops are largely raised to feed livestock and not for sale.

Milk is by far the greatest source of income, both in terms of the number of farmers producing it and in the average income per farm. In Group I the farmers had an average of 2.6 milch cows per farm, but in Group IV the herds averaged 7.6 head. It is noteworthy that, although 73% of the farmers of Group I reported the ownership of cows, only 28% had any income from milk. Likewise, 65% reported having chickens, but only 9% sold eggs. Even in Group IV not all farmers who owned cows reported an income from the sale of milk. Sixty-three percent of the settlers had horses, 29% reported hogs, and 75% raised chickens.[9] The fact that a certain proportion of the settlers have livestock but no cash income therefrom is another indication of the self-sufficing nature of pioneer agriculture. This was substantiated by the Census of 1930 which indicated that in practically all cut-over counties from 5 to over 21% of the

[7] This seems to be the ideal under the "Minnesota grubstake plan" of resettlement. See A. D. Wilson, "Settler Relocation: A Description of the Minnesota Plan," 14 *Journal of Land & Public Utility Economics* 402–16 at 416 (November, 1938).

[8] Wisconsin State Planning Board, *Bulletin No. 7*, *op. cit.*, pp. 40–50.

[9] Data not presented in tables.

TABLE IV. FARM INCOME OF 1,233 NORTHERN WISCONSIN OWNER-SETTLERS BY TYPES OF INCOME, NUMBER AND PERCENTAGE OF EACH GROUP REPORTING THE INCOME, AND INCOME PER FARM, BY YEARS OF RESIDENCE, FEBRUARY, 1934*

| Group | Years of Residence | Number in Group | Livestock | | | Milk | | | Eggs | | | Crops | | | Garden | | | Forest Products | | | Average Cash from All Farm Sources (per Farm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. Reporting | Per Cent of Group Reporting | Average Income | No. Reporting | Per Cent of Group Reporting | Average Income | No. Reporting | Per Cent of Group Reporting | Average Income | No. Reporting | Per Cent of Group Reporting | Average Income | No. Reporting | Per Cent of Group Reporting | Average Income | No. Reporting | Per Cent of Group Reporting | Average Income | |
| I | 1– 5 | 439 | 110 | 25 | $48 | 121 | 28 | $ 85 | 42 | 10 | $73 | 44 | 10 | $ 38 | 18 | 4 | $39 | 130 | 30 | $69 | $ 69 |
| II | 6–15 | 452 | 214 | 47 | 59 | 289 | 64 | 139 | 100 | 22 | 57 | 87 | 19 | 96 | 48 | 11 | 39 | 82 | 18 | 90 | 109 |
| III | 16–20 | 187 | 103 | 55 | 71 | 137 | 73 | 177 | 55 | 29 | 43 | 42 | 22 | 84 | 17 | 9 | 40 | 37 | 20 | 96 | 223 |
| IV | 21+ | 155 | 110 | 71 | 70 | 130 | 84 | 202 | 55 | 35 | 45 | 33 | 21 | 116 | 11 | 7 | 65 | 34 | 22 | 85 | 284 |
| Total | | 1,233 | 537 | 44 | 61 | 677 | 55 | 149 | 252 | 20 | 54 | 206 | 17 | 84 | 94 | 7.6 | 42 | 283 | 23 | 81 | 156 |

* It should be explained that the figures shown in the columns headed "average income" are averages for only those farms reporting income of the character referred to, and the computation of the average was based on these reporting farms rather than all farms in the particular group.

farmers were classed as self-sufficing, whereas in the remainder of the state the proportion was usually below 2%.[10]

The last column in Table IV is a composite of all sources of annual *cash* income for each group and does not include the subsistence, shelter, and fuel furnished by the farm. It will be noted that for those in Group I the farm brought less than $70 in cash, whereas those in Group IV had over four times this income. The entire group of 1,233 owner-operators had an average farm income of only $156.

### *Income from Non-Farm Sources*

No part of Wisconsin has as many part-time farmers as the cut-over region. In 1934, 60% or more of the farmers of 8 northern counties were "working off their farms for pay or income" and in 8 other counties ½ of the farmers increased their revenues in this manner. The average for the state as a whole was 31.5%, but in 10 southern counties it was below 20%.[11] Table V shows that the owner-operators listed here had an average income of $156 from outside sources, exactly equal to the average farm income, making a total cash family income of $312 from all sources. Nonfarm incomes are especially important in the early stages of farm development. As length of residence increases, nonfarm income decreases relative to farm income, and for the sample group actually exceeds it after 16 years' residence.

In the past, private employment in lumber camps, sawmills, mines, and factories furnished the bulk of the "grubstake money," but even in 1933 almost 1/3 of the isolated settlers had income from one or more of these sources. As might be expected, a higher proportion of the more recent settlers had earnings of this type, but even 1/5 of those families who had been on their farms more than 20 years obtained some income in this way. In fact, their average income from this source ($291 per household) is considerably above the similar earnings of those in the other groups.

Sixty families, most of them in the first two groups, received some support from relatives. How much of this is a periodical contribution, and how much represents inheritance is not known. A comparatively small number received

[10] U.S. Census of 1930, "Agriculture, Third Series, Type of Farm." A self-sufficing farm was defined as one on which "the value of farm products used by the operator's family was 50% or more of the total value of all farm products."

[11] *Bulletin No. 188*, "Wisconsin Agriculture," Wisconsin Crop and Livestock Reporting Service (1938), p. 12.

TABLE V. NON-AGRICULTURAL SOURCES OF INCOME OF 1,233 NORTHERN WISCONSIN OWNER-SETTLERS BY TYPES OF INCOME AND YEARS OF RESIDENCE, 1933*

| Group | Years of Residence | Number in Group | Town Office | | | CWA | | | Public Works | | | Private Employer | | | Relatives | | | Pensions | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. Reporting | Per Cent of Group | Average Income | No. Reporting | Per Cent of Group | Average Income | No. Reporting | Per Cent of Group | Average Income | No. Reporting | Per Cent of Group | Average Income | No. Reporting | Per Cent of Group | Average Income | No. Reporting | Per Cent of Group | Average Income | Outside Income | Farm Income | Income from All Sources |
| I | 1– 5 | 439 | 20 | 4.5 | $ 34 | 187 | 42 | $68 | 207 | 47 | $ 81 | 146 | 33 | $179 | 26 | 5.9 | $107 | 18 | 4.1 | $166 | $141 | $ 69 | $210 |
| II | 6–15 | 452 | 24 | 5.3 | 103 | 167 | 37 | 67 | 226 | 50 | 140 | 135 | 30 | 175 | 22 | 4.9 | 153 | 10 | 2.2 | 452 | 170 | 169 | 339 |
| III | 16–20 | 187 | 14 | 7.5 | 105 | 59 | 32 | 76 | 81 | 43 | 143 | 61 | 33 | 184 | 8 | 4.3 | 217 | 7 | 3.7 | 248 | 187 | 233 | 410 |
| IV | 21+ | 155 | 13 | 8.4 | 95 | 32 | 21 | 62 | 69 | 44 | 100 | 31 | 20 | 291 | 4 | 2.6 | 55 | 5 | 3.2 | 452 | 155 | 284 | 439 |
| Total | | 1,233 | 71 | 5.8 | 83 | 445 | 36 | 69 | 583 | 47 | 115 | 373 | 30 | 188 | 60 | 4.8 | 135 | 40 | 3.2 | 288 | 156 | 156 | 312 |

* See footnote to Table IV.

pensions, but in such cases the income per family was a fairly large sum. Holding town offices helped the budget in 71 cases—mostly of the older settlers. Work on highways and other "government work" permitted no less than 47% of the settlers to add to their family budgets. The CWA works program, first available in 1933–1934, gave employment to members of 36% of the families, with no significant variations among groups.

Averages, however, are deceptive and obscure facts which may be of significance in public land programs. Chart I shows the distribution of settlers by size of income from farms in the vertical

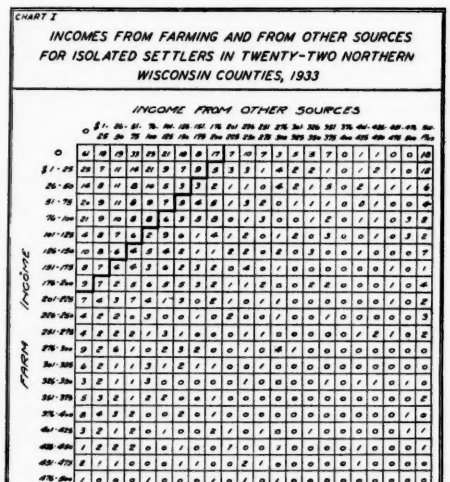


CHART I
INCOMES FROM FARMING AND FROM OTHER SOURCES
FOR ISOLATED SETTLERS IN TWENTY-TWO NORTHERN
WISCONSIN COUNTIES, 1933
INCOME FROM OTHER SOURCES
FARM INCOME
Indicates Number of Settlers

columns and by income from non-farm sources on the horizontal lines. It is noteworthy that 275 isolated settlers reported no income from farm operations in 1933. In other words, their entire *cash* income came from non-farm sources, with the farm contributing only "subsistence" in the form of food, shelter, and fuel. On the other hand, 247 owners lived exclusively from farm incomes with no "outside" revenues of any sort. Most striking of all is the fact that 61 reported neither a farm nor a non-farm income. Some allowance must be made for failures in enumeration and temporary lack of income for a given year, but the most reasonable explanation is that these settlers were living on income accumulated before moving to the land. This is borne out by a study of the schedules of individual settlers. With few exceptions, those with low farm incomes likewise had modest non-farm incomes. By far the largest number of all settlers are found in the triangle on the chart enclosing the $200 *total* incomes.

### *Indebtedness*

The usual settler is in need of credit for the purchase of his farm, for his equipment, and to "grubstake" himself until enough land can be cleared to carry the enterprise. A special study was made of 2,138 owners, including the 1,233 listed in previous tables. It was gratifying to find that more than ½ were debt free as far as land credit is concerned; personal debts were not considered. About 22% of all farmers, or 44% of those in debt, were still holding their land subject to a land contract and the remainder had mortgages on their farms. More than ½ of those under land contract owed less than $500, and about 36% of those with mortgages were in debt to the same degree (Table VI).

Contrary to the expectation that as the length of residence increases the number of farmers in debt and the amount owed will decrease, Table VI shows that the amount of indebtedness actually increased with longer residence with but one exception, i.e., under land contracts involving $1,000 or more. The encouraging fact, however, is that in

TABLE VI. YEARS OF RESIDENCE, SIZE OF BUSINESS, VALUE, TAXES, INCOME AND RELIEF STATUS OF 2,138 SETTLERS BY AMOUNT AND TYPE OF INDEBTEDNESS, 1933

| Type and Amount of Indebtedness | No. in Group | Per Cent of Total | Average Years of Residence | Average Size of Farm (Acres) | Average Cultivated Acres per Farm | Assessed Value of | | | Income | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Land | Improvements | Total | From Farm | Other Sources | Total |
| Debt Free.... | 1,083 | 50.65% | 10.4 | 79.6 | 14.0 | $502 | $261 | $ 763 | $105 | $184 | $289 |
| *Land Contract* | | | | | | | | | | | |
| With debt | | | | | | | | | | | |
| $ 1– 500 | 276 | 12.91 | 4.5 | 59.4 | 8.0 | 327 | 178 | 505 | 64 | 200 | 264 |
| 501–1,000 | 99 | 4.63 | 7.2 | 77.6 | 12.6 | 486 | 165 | 651 | 105 | 187 | 292 |
| 1,000+ | 97 | 4.54 | 6.5 | 113.5 | 21.8 | 781 | 297 | 1,078 | 162 | 187 | 349 |
| Total..... | 472 | 22.08 | | | | | | | | | |
| *Mortgage Debt* | | | | | | | | | | | |
| $ 1– 500 | 210 | 9.82 | 11.1 | 75.0 | 15.0 | 500 | 201 | 701 | 121 | 191 | 312 |
| 501–1,000 | 156 | 7.30 | 12.5 | 89.0 | 21.6 | 640 | 264 | 1,004 | 184 | 178 | 362 |
| 1,000+ | 217 | 10.15 | 13.8 | 132.9 | 35.6 | 1,015 | 482 | 1,497 | 310 | 205 | 505 |
| Total..... | 583 | 27.27 | | | | | | | | | |
| TOTAL.... | 2,138 | 100.00% | | | | | | | | | |

every group the ability to carry the load tends to be in direct proportion to the debt. For instance, those owing $1,000 or more on a land contract had almost twice as much land and had more than double the cleared acres of the settlers who owed less than $500. The same relationship holds true for the value of the farm and the income from farm and non-farm sources.

The findings in this survey tend to corroborate the facts revealed by the 1930 Census—namely, the high proportion of owner-operated farms under mortgage in northern Wisconsin, in contrast to the comparative freedom from mortgages in the corresponding cut-over counties of Michigan and Minnesota. In seven of the counties in which the survey was made, more than 65% of all farms were mortgaged. Furthermore, the interest rates, especially on chattel mortgages and notes, are appreciably higher in this region than in the southern part of the state.[12]

Debt is not only a burden in itself, but has important implications for the farm economy of the region. Many writers have praised the self-sufficing economy of pioneer areas, yet indebtedness requires cash, both to pay the interest and to repay the principal. To the extent that isolated settlers are indebted, they must do "commercial farming," produce for the market, or have an outside source of cash income. The same holds true for taxes.

Indebtedness is also an important consideration in a resettlement program. It is presumed that, whenever a government agency "buys out" an isolated settler, the entire purchase money will be available to buy another farm or to establish the family in another occupation. In only about 51% of the cases enumerated in Table VI would this be true. In 23% of the cases, up to $500 would have to be subtracted from the purchase price to satisfy a mortgage or land contract and, for about 15% of the farms, more than $1,000 would have to be taken. Since the assessed value of the average farm under a land contract with a debt of $1,000 or more is only

[12] "Wisconsin Agriculture," *Bulletin No. 188, op. cit.*, p. 14.

$1,078, the equity remaining after debts is usually not very large.[13]

### *Taxes and Relief*

Data on taxation, tax delinquency, and relief were obtained from 1,188 schedules of owner-operators. Taxes averaged $25.52 per farm, ranging from about $14 for settlers in Group I to $43 per farm for those in Group IV. These figures do not appear excessive until stated in terms of a tax rate, or in proportion to the farmers' cash income. Based upon the assessed valuation of the farms involved, these settlers had a tax rate of 34 mills.[14] The newer farms were charged with taxes equal to 20% of their total cash income and those in the other groups 15 to 16%. It is hardly necessary to point out that this is a heavy burden and accounts in part for the failure of 35% of the isolated settlers to pay taxes for an average period of 2.3 years preceding January, 1934. The proportion of delinquent taxpayers was highest in the first two groups, but the average amount delinquent was greatest on the farms with the longest period of development.

The comforting theory that people become self-sustaining if brought into contact with land was exploded in this depression. Table VII shows that of the 1,188 actual land-owning families (strictly excluding the less progressive owners, the renters, and squatters) almost 37% had received public relief for a period of 6.7 months at the time the investigators visited them in January or February of 1934. As might be expected, a larger proportion of the newer settlers were receiving aid than of the other groups, yet almost 1/5 of Group IV were also getting some relief. Naturally, these figures are out of date by this time; nevertheless, they show how quickly those who "fled from the city" were in need of assistance and how even the older settlers were "hit by the depression."

### *Conclusion*

Resettlement is a human rather than a land "problem." Many personal factors have to be considered in relocating a family. It was found, for instance, in this study that 14% of the 1,233 owners were single men, widows, and widowers who could not be considered in a farm-forest project which had as its central idea the establishment of a home. Almost 1/8 of the married men were disqualified because they were physically

[13] The importance of debt and taxes is vividly brought out in A. D. Wilson's article, *op. cit.*

[14] The average tax rate for Wisconsin as a whole was 23 mills in 1932 and in five northern counties was more than 34 mills. In many southern Wisconsin counties the tax rate is from 13 to 15 mills.

TABLE VII. TAXATION, TAX DELINQUENCY AND RELIEF STATUS OF 1,188 NORTHERN WISCONSIN OWNER-SETTLERS, 1933

| Group | Years of Residence | Number Reporting | Taxes | | Delinquency | | | | Relief Status | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Average Taxes Paid per Farm | Per Cent of Farm Income Paid in Taxes | No. Farms Delinquent | Per Cent of Group | Amount per Farm | Average Years Delinquent | No. of Farms | Per Cent of Group | Average No. of Months | Average Cost per Month |
| I | 1– 5 | 399 | $13.97 | 20% | 154 | 39 | $ 48.05 | 2.5 | 211 | 52.9 | 6.8 | $89 |
| II | 6–15 | 448 | 25.34 | 15 | 170 | 38 | 55.28 | 2.1 | 147 | 32.8 | 6.0 | 72 |
| III | 16–20 | 186 | 35.79 | 16 | 57 | 31 | 98.08 | 2.4 | 51 | 27.4 | 11.5 | 78 |
| IV | 21+ | 155 | 43.41 | 15 | 36 | 23 | 100.86 | 2.0 | 30 | 19.4 | 5.6 | 74 |
| Total | | 1,188 | 25.52 | 16.5 | 417 | 35 | 62.39 | 2.3 | 439 | 37.0 | 6.7 | 82 |

unfit for forest labor, but 1/2 of these might be considered eligible because they had grown sons who could work in the forests. Since the payments were to extend over 20 to 25 years, it was not considered wise to take men more than 50 years of age; this policy disqualified another 28% of the settlers. Thus, almost 1/2 of the non-conforming users and isolated settlers could not be assisted through this particular project, which means that a resettlement program would have to take on other phases to complete the relocation of all settlers who should be considered.[15]

Resettlement of people and readjustment of land uses are long-time processes and, although considerable progress has been made, the greater part of the work is still unfinished. About 300 families had been "bought out" by federal agencies in northern Wisconsin by November, 1938, and a few others have been relocated by counties and towns.[16] The program of the Federal Government has also been changed from the purchase of farms within a given purchase area to the buying of the holdings of selected non-conforming users under the jurisdiction of the Soil Conservation Service. The data gathered in this study will be valuable in the further prosecution of land-adjustment programs, just as they have served in planning various projects in the past.[17]

[15] It was recognized from the beginning that the farm-forest homesteads project could be only a part of a much larger land program. For instance, the Corporation had no authority to buy the land which the settler owned in the zoned area or in the federal forest. However, it was hoped that the project could be geared with the land exchanges of counties, the purchase of land by the Federal Forest Service, and particularly with the submarginal-land-purchase project of the Resettlement Administration, whose program was just getting under way. (See A. D. Wilson, *op. cit.*)

[16] L. G. Sorden, "Applying a Plan for Land and People," 1 *Land Policy Review* 16–20 (November–December, 1938).

[17] The data obtained in this survey have been helpful in planning the various land programs proposed and under way since 1934. See George S. Wehrwein and J. A. Baker, "Relocation of Non-Conforming Land Users of the Zoned Counties in Wisconsin," *op. cit.* and "The Cost of Isolated Settlement in Northern Wisconsin," 2 *Rural Sociology* 253 (September, 1937) by the same authors; also Bushrod W. Allin, "The Cut-Over Region of the Great Lake States," in Carter Goodrich, et al, *Migration and Economic Opportunity* (Philadelphia: University of Pennsylvania Press, 1936), pp. 164–201.

# Public Utility Competition: A Case Study

*By* LAURENCE R. GRAY*

AN Arizona community (population about 10,000) was served by an old, obsolete electric plant. The citizens, having become dissatisfied with the character of the service and its cost, used every available means to persuade the company to put in more modern machinery. Failing this, they applied to the Arizona Corporation Commission. The Commission had previously announced that it was the duty of the local utility to serve the public within reasonable limits; and, failing this duty, the utility would be compelled to remedy the difficulty or vacate the field in order to permit the entrance of another and competing company which was "prepared and willing" to comply with the needs and necessities of the public.[1] In spite of this pronouncement, the Commission seemed to be somewhat doubtful of its ability to compel extension or improvement in the service. As a matter of fact, it appeared unlikely that the owners of the utility could get the requisite amount of capital for expansion.

Unable to obtain betterment by application to the company and in spite of discouragement by the Commission, enterprising citizens brought pressure to bear upon the Commission and persuaded it to allow a second utility to enter the field. In view of the fact that the company sold direct current for lighting purposes and rarely operated during the daylight hours, the high level of rates was not unusual.[2] In issuing the certificate of convenience and necessity to the competing utility, the Commission announced its future policy in such cases. The complainants must henceforth establish the fact that the potential competitor would be able to serve more adequately at rates substantially lower than those prevailing; and that the improvement must be of such scope as to be obviously in the public interest.[3] In other words, where a competitor can more adequately furnish the commodity at substantially lower rates than the existing company, competition would be allowed. There must be the possibility of lower rates and improved service, but no makeshift for the purpose of according cut-throat competition. The existing operator must be financially unable to improve; and the new company must demonstrate its capacity to amass enough

* Associate Professor of Economics, University of Arizona.

[1] A.C.C. Docket No. 186, 3 *Annual Report* 189 (1914). The Arizona Corporation Commission was formed when Arizona became a state in 1912.

[2] In 1913 the following rate schedule was in effect: Discounts on aggregate bills as follows: $10–$20, 10% off list; $20–$30, 20% off list; $30 and up, 30% off list. For residence and store lighting (stores closing before midnight) the base rate was 20¢ per kwh. For stores closing at midnight the base rate was 12¢ per kwh; and for stores closing at 3 A.M. or thereafter the base rate was 10¢ per kwh. Immediately after the Commission approved the application of the second and competing utility, the following rate schedule was approved: Light, minimum bill $1.00. Energy at 12¢ per kwh. for 1st 100 kwhs.; 11¢ per kwh. for next 100 kwhs.; 7¢ per kwh. for next 200 kwhs.; 6¢ per kwh. for next 250 kwhs.; 5¢ per kwh. for next 250 kwhs.; 4¢ per kwh. for excess. Power, minimum bill $1.50 for 2 H.P. or less; and 75¢ for each additional H.P. of installed capacity. The energy at 10¢ per kwh. for 1st 100 kwhs.; 9¢ per kwh. for next 100 kwhs.; 8¢ per kwh. for next 100 kwhs.; 7¢ per kwh. for next 200 kwhs.; 6¢ per kwh. for next 250 kwhs.; 5¢ per kwh. for next 250; and 4¢ per kwh. for excess. This change was a material reduction and it remained in effect until 1920.

[3] A.C.C. Docket No. 198, 3 *Annual Report* 228 (1914). In this case, the Commission was convinced that the incumbent company was unable to finance improvement in its obsolete plant; and that the present and prospective future costs of rendering service from such equipment promised no possible decrease in cost of the service to local consumers. It did not appear that the company could obtain adequate capital except at costs which would constitute an undue burden upon the consumers.

capital and managerial ability to assure the Commission that its project would be completed.

It is true that competition may result in some immediate gain to certain consumers. Generally, a utility can take on new business at any rate which exceeds the extra cost incurred on account of the added output. The new customer may thus pay lower rates. In other words, the new business may be taken from the competitor at discriminatory rates, while the old customers continue to pay at the old and higher rates, until it becomes necessary to confer added favors in order to retain the old customers.

The only trouble is that there is a limited amount of business in the average community, and the only way one plant may increase the volume of its output is by taking business away from the competing plant. The competitor, however, will not allow his business to get away from him without a struggle. Special inducements must therefore be offered certain customers either to get them away from the competitor or to keep them from going to the competitor. These inducements must be kept secret; neither the competitor nor the old customers must know they have been offered nor how much has been offered. Obviously, however, such policies cannot be permanently concealed. Hence, surreptitious rate cutting continues until neither plant yields revenues sufficient to meet maintenance, to say nothing of being able to attract additional capital for betterments. In other words, revenues are insufficient to meet dividends and interest. Failure to meet interest obligations or pay dividends will weaken both companies' credit and will make it impossible for them to obtain additional capital except at heavy discounts.

*The Effects of Competition*

Immediately after the Arizona Corporation Commission approved competition in this community, a full-fledged power war developed. Detective work on the part of the new company uncovered the fact that the old company had never been granted a franchise. The old company, nevertheless, contested the election at which the franchise had been granted the new company—to no avail. The old company then threatened to close down unless granted a franchise and a permit to operate. Since the new company was not yet completed, this action would have deprived the community of electric service entirely. The old company had a strategic advantage in that it was already in a position to render service and was actually doing so. Its counsel insisted that, if the Commission refused to grant the certificate of convenience and necessity for which application was made, it would be justified in discontinuing service, thus leaving the town without light and power. The Commission reiterated its firm conviction that competition was not in the interest of the public but that the circumstances and conditions prevailing in the locality seemed to necessitate granting the permit.[4]

In December, 1917 the Commission approved the application of the old company for authority to sell $200,000 in 20-year 6% first mortgage bonds for the purpose of retiring short-term notes, the proceeds of which had been spent to rehabilitate and expand its plant.[5] Such an expansion would undoubtedly have been considered unnecessary and unwise in absence of the desire to be equipped to take business from its competitor.

Both companies made extensions and betterments because of the "unprecedented increase in their business."[6] Con-

[4] A.C.C. Docket No. 252, 3 *Annual Report* 358 (1915).
[5] A.C.C. Docket No. 476, 6 *Annual Report* 324 (1918).
[6] A.C.C. Docket No. 508, 6 *Annual Report* 385 (1918).

sidering the fact that the population of the community had expanded but little prior to 1917, one might well speculate as to the sources of this "unprecedented increase." In view of the rapid decline in the effectiveness of both of these plants, it does not seem reasonable to assume that any considerable amount of new property was installed.

Inasmuch as changes in rates necessitated the Commission's approval, there was no official record of persistent rate cutting. As a matter of fact, there was no change in the approved rate schedules until 1924.[7] On the other hand, homes and business houses were wired free of charge, and it is said that fixtures were lent to customers who would agree to connect with the lender for a specified period of time. Many domestic establishments were supposed to be receiving energy at "commercial" rates, and it is probable that no two of them paid the same rates. Duplicate distribution systems had been erected on most of the streets and alleys of the city. In the words of the Commission: "Both companies immediately embarked upon a program of ruinous cut-throat activities which in the end resulted only in poor utility service and operating deficits."[8] Discrimination became the rule rather than the exception.

Both of these companies operated "in the red." But, since one of them was backed by one of the town's prominent and wealthy families and the other was similarly assisted by the resources of another wealthy and influential family, the battle was more protracted and costly than it could have been without such support. According to the Commission, the results had been far from satisfactory either in return to the companies or in character of the service. In nine years' time neither company could finance essential betterments which seemed imperative if the service were to continue.

In August, 1918 both companies filed applications for permission to collect a 20% surcharge on existing rate schedules. The new company presented data purporting to show that its net operating revenues for 1917 were only $31,191. After meeting interest on its funded and floating debt and an operating deficit of $756.54 from its gas business, a total of $1,165.01 was left available for dividends. The requirements of the preferred shares alone were about $8,000 per annum. The old company also presented considerable testimony in support of its claim that operating costs had risen and that it was unable to meet its interest charges.[9] For the six months ending July 1, 1918, the combined net revenues of the two companies ($12,195.21) would have been inadequate to meet interest on their aggregate floating and funded debt.

### *Results under Consolidation*

Eventually, there was an armistice. The two rivals consolidated, but competition had been destructive not only of itself but of a considerable amount of local capital and good will. The consolidating company, organized by an investment banking firm in 1922, was to buy up the two competing concerns and operate them as a single unit.[10]

The consolidating company issued both common and 8% cumulative preferred stock in exchange for the properties of the two competitors. In addition, the debts of the two were assumed and

[7] See Table I below.

[8] A.C.C. Docket No. 1772-E-185, Official Transcript of Decision, p. 1.

[9] A.C.C. Docket No. 544, 7 *Annual Report* 30 (1918). Gross income (first 6 months of 1918) was reported as $3,557.99, whereas interest and other deductions from gross income amounted to $10,225.48. The Commission approved the surcharge.

[10] A.C.C. Docket No. 1610-E-169, *Triennial Report* 336 (1923).

funded, the company issuing 6½% bonds for the purpose. Part of the proceeds of the bond issue was to be used to provide for betterments and other corporate purposes. The consolidating company issued securities aggregating about $1,250,000 against a property estimated as worth about $786,000 one year later (1925). Roughly, this meant interest of $42,250 per annum and preferred dividends of $8,000—a total ($50,250) considerably in excess of the combined net operating revenues of the companies for the year preceding the consolidation.

The new management planned many changes in organization. The published rate schedules were to be rigidly enforced and irregular methods were to be discontinued. Unnecessary employees were to be dismissed. Unfortunately, however, this attitude intensified the antagonism of local groups "accustomed to, or beneficiaries of, the old order."[11] The profit and loss deficit of $82,116 at the close of 1925 (the first year of consolidation) had become $144,087 by the end of 1926.

Early in 1928, the property was sold to other interests. The new owners announced that the two plants would be remodeled, and that definite plans were made for the future. This fact encouraged local investors in the old companies and influenced them to invest in the new. Unfortunately, there was a succession of poor managers, particularly in the matter of handling public relations. Rumors of friction between local managers and the parent organization were talked around and greatly intensified the hostility of the consumers.

The properties had deteriorated to the point where the plants could be operated only with extreme difficulty. Expenditures were reduced to a bare minimum, maintenance of plant and equipment being practically eliminated. The cost of capital for rehabilitation would be exorbitant and the only solution seemed to be an entirely new company and a new plant. Continued complaints regarding rates, discrimination, and service were answered with the statement that the Commission was unable to finance a thoroughgoing investigation. Furthermore, the Commission stated that it was of the opinion that an appraisal of the properties would "unquestionably show a valuation which would warrant no decrease in rates."[12] That is, the consumers themselves had insisted on competition and the resulting duplication of equipment. Now, there was no alternative other than to pay higher rates than would have been necessary in the absence of excessive investment. Having sustained heavy losses during the period of competition and thereafter, it was natural that the management should have striven for earnings sufficient to cover the cost of operating its plant even though such costs were excessive. It is doubtful if any commission would have been able to keep rates lower than actual cost of the service.

In 1930, the parent company became embarrassed as a result of alleged manipulations and extraordinary overcapitalization.[13] Because of inability to effect voluntary reorganization, a new corporation was formed to acquire title to all rights and properties of the bankrupt holding company. The creditors and the preferred stockholders received 3%, 20-year income notes and common stock (par $1) of the new corporation. Both

[11] P.U.R. 1925 C 41.

[12] P.U.R. 1925 C 42.

[13] According to *Moody's Manual of Investments, Public Utilities*, 1931, the following amounts were outstanding on October 31, 1931: Preferred Stock, $8,959,700; A and B Common, $6,520,001; and Funded Debt, $9,886,500. The company went into a voluntary receivership November 1, 1929 with liabilities amounting to over $12,000,000. (Cf. *Commercial and Financial Chronicle*, Nov. 9, 1929, p. 3012.)

classes of common stock of the old corporation (A and B) were eliminated. The capitalization of the parent corporation was scaled down to a point approximating the value of the aggregate properties as established by state regulatory bodies in states where the corporation's subsidiaries were situated.[14]

### *Competition and the Rate Level*

For the period prior to competition (1892–1913), rates were very high. Following the advent of a competitor, the Commission approved reductions of considerable magnitude. In 1920, however, the Commission approved a surcharge of 20% on each bill. This surcharge remained in effect until 1931. Following consolidation in 1924, there was no reduction in any classification. In 1928 the local properties were absorbed by holding company interests and rates to commercial power consumers were reduced sharply. In 1930 the parent company went into receivership and in the following year adjustments downward were made in all classifications except rural. After reorganization in 1935, reductions were filed by the company when it found net revenues (before depreciation) rising above an established maximum.

Table I gives the absolute amount and an index of the monthly bills of consumers of six classifications.

### *Competition Evaluated*

In the first few decades of public utility development, a great deal of faith was placed in competition. After many bitter and expensive experiences, it was realized that competition was no guarantee of an ample quantity of service at a reasonable cost to the consumers concerned. Undoubtedly there are good grounds for dissatisfaction with monopoly occupation of present-day communities. This is particularly true where commissions take no particular interest in initiating investigations into character of the service and reasonableness of rates. Naturally, the wise public utility management is deeply concerned with the problem of "favorable" public relations; but a good many are too complacent in their assurance that the public will put up with almost anything rather than face the disadvantages of competition.

The commission may have possession of complete data on the failure of competition. The public, however, may become so incensed over the attitude of the local utility's management that it will consider competition desirable as a punitive measure. Seldom can the irate customer be made to see that his "getting even" with the local electric company is bound to be a boomerang.

In this particular instance, it would have been much more to the long-run advantage of both consumers and investors had the Commission forced the original company to expand and improve its plant. The initial investment in plant

[14] The approved reorganization plan involved writing down values at which the properties of the subsidiaries were carried on the books of the parent corporation. These properties are located in several different states. In each case the state commission in question had completed an appraisal of those properties which were situated in its jurisdiction. It was believed that the capitalization of the new corporation (the parent company) should not exceed the aggregate present value of those properties as established by the several commissions concerned.

The reorganization was effected under Section 77B of the Federal Acts Relating to Bankruptcy. The new company acquired title to all properties from the trustee in bankruptcy June 14, 1934. The plan was approved by the U.S. District Court, District of Minnesota, 4th Division, October 15, 1935. On December 3, 1935, application was filed with the Arizona Corporation Commission to transfer local properties and certificates of convenience and necessity to the new company. (A.C.C. Docket No. 6559-E-525, Files of the A.C.C.) There has been considerable improvement in the character of local management and public relations. Duplicate properties have been junked. The old plant (supplemented by purchase of power from a neighboring utility) has been greatly improved in physical condition.

TABLE I. AMOUNTS AND INDEXES OF MONTHLY BILLS IN SIX CLASSIFICATIONS

| Year* | Residential | | | | Rural | | | | Commercial | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Light (55 Kwhs.) | | Combination (195 Kwhs.) | | Light (55 Kwhs.) | | Combination (225 Kwhs.) | | Light (220 Kwhs.) | | Power (1,200 Kwhs.)† | |
| | Total Bill | Index | Total Bill | Index | Total Bill | Index | Total Bill | Index | Total Bill | Index | Total Bill | Index |
| 1913 | $10.00 | 189 | — | — | $10.00 | 189 | — | — | $30.80 | 208 | — | — |
| 1914 | 6.60 | 118 | — | — | 6.60 | 118 | — | — | 24.40 | 165 | $81.50 | 161 |
| 1920 | 7.92 | 149 | — | — | 7.92 | 149 | — | — | 29.28 | 198 | 98.80 | 196 |
| 1923 | 7.92 | 149 | $26.94 | 285 | 7.92 | 149 | $30.30 | 293 | 29.28 | 198 | 98.80 | 196 |
| 1928 | 7.92 | 149 | 26.94 | 285 | 7.92 | 149 | 30.30 | 293 | 29.28 | 198 | 54.50 | 108 |
| 1930 | 7.92 | 149 | 26.94 | 285 | 7.92 | 149 | 10.80 | 104 | 29.28 | 198 | 54.50 | 108 |
| 1931 | 6.10 | 115 | 12.68 | 134 | 7.92 | 149 | 13.10 | 127 | 25.00 | 169 | 50.50 | 100 |
| 1932 | 6.10 | 115 | 12.68 | 134 | 6.10 | 115 | 11.90 | 115 | 19.20 | 130 | 50.50 | 100 |
| 1935 | 5.30 | 100 | 9.80 | 104 | 5.30 | 100 | 10.70 | 103 | 20.80 | 141 | 50.50 | 100 |
| 1936 | 5.80 | 109 | 9.80 | 104 | 5.30 | 100 | 10.70 | 103 | 20.80 | 141 | 50.50 | 100 |
| 1937 | 5.30 | 100 | 9.45 | 100 | 5.30 | 100 | 10.70 | 103 | 20.80 | 141 | 50.50 | 100 |
| 1938 | 5.30 | 100 | 9.45 | 100 | 5.30 | 100 | 10.35 | 100 | 14.80 | 100 | 50.50 | 100 |

* Intervening years are omitted to conserve space; except for the years listed, no changes were filed with the Commission.
The period covers the years elapsing between the time Arizona became a state (1912) and September, 1938. Beginning about 1931, there were some few industrial power consumers but most of these received the commercial power classification. In each classification there is a minimum bill which would be far below the amount charged for the assumed consumption. These data were prepared from schedules on file with the Arizona Corporation Commission.
† Installed capacity of 6 HP.

and distribution system would have been somewhat less than the amount spent on two plants with the same aggregate capacity. Inasmuch as the initial investment is quite substantial, this saving in the requisite capital is important.

An additional economy would have arisen out of the greater diversity of use. The mere fact that the customers of a single plant are increased in number would tend to reduce the likelihood of customers making their maximum demands simultaneously. Not only would this fact have necessitated an original investment of something less than twice the size of the two competing plants, but also the single plant would have had a smaller percentage of unutilized capacity for a larger part of the time.

Another extravagance arose out of the fact that operating expenses were larger than they would have been in the absence of competition. As the individual unit increases in size, operating expenses do not increase proportionately. Perhaps nowhere are the economies of large-scale production and operation so pronounced as in plants producing electric power. Larger prime movers and generators would have been more efficient than the smaller ones, and labor-saving devices would have been feasible. Competition thus increased cost of the service to the consumers and did not permit a level of revenues which would maintain the investment and attract additional capital for betterments.

Finally, competition resulted in duplicate distribution systems, a fact which more than doubled the number of such fixtures necessary to handle the business. Aside from the fact that the rather attractive landscape was spoiled by a wilderness of poles and wires, the consumers undoubtedly suffered from excessive distribution costs.

In view of this rather protracted and bitter dispute, one would assume that the consumers would exhaust every possible means of improvement before they would repeat the experience. A great many local citizens, however, would today advocate that the municipality construct a new plant to compete with the existing electric light and gas company.

# Chicago Real Estate Bonds, 1919-1938

## II. Market Behavior

*By* GENEVIEVE KOESTER*

THE first instalment of this article[1] described the corporate history of real estate bonds in the Chicago area during the period 1919–1938. In order to complete the picture of this type of financing it is necessary to consider how these securities have fared marketwise.

### *Market Conditions*

*Before the Default Era.* For the issues underwritten by the houses specializing in real estage securities the situation before the onset of the default era can be reduced to very simple terms; each underwriting organization maintained the market for its own issues at prices ranging between 95 and 100.

One factor out of the many which were influential during the entire period under survey was of particular importance in creating this condition. The majority of the investors in these securities were unfamiliar with any other investment organization or source of financial information, and were thus entirely dependent on the house of original issue in any transaction arising in connection with them. It was expected that the issuing house would be able to buy and resell these securities if the purchaser found it imperative to dispose of his holdings. Such an occasion would only occur in case of an emergency, since the bonds were purchased largely as long-term investments with little thought of market speculation. The prestige and faith in an underwriting house were greatly enhanced by this policy and a market close to par was maintained by the several houses for their own issues.

Under these conditions of market creation a report on bond issues from their inception to the default date would show price fluctuations slightly below par and would contribute no significant information.

The investment houses and bank affiliates, which had entered the field of real estate finance to participate in the underwriting of some of the largest issues, also carried on over-the-counter transactions in their securities. This was a less biased market than in the case of the real estate specialists, for other dealers also bought and sold these securities and the listing of some issues on the organized exchanges widened their field of investment interest and acted as regulatory competition for comparable unlisted securities. For such issues a price study prior to default might reveal some interesting trends, but complete data could be obtained for only the few listed securities, thus reducing its possible significance.

*During the Default Era.* As defaults occurred on an increasing number of issues, the finances of the underwriting organizations became seriously involved. Every organization which specialized in real estate securities was forced to suspend operations in the early stages of the default procession. The general investment houses, for the most part, weathered the storm. The Harris Trust and Savings Bank was the only member of the bank or bank-affiliate group participating in this type of underwriting which was not a part of the many con-

* Instructor, College of Commerce and Finance, Drake University.

[1] "Chicago Real Estate Bonds, 1919–1938: I. Corporate History," 15 *Journal of Land & Public Utility Economics* 49–58 (February, 1939).

solidations and mergers in Chicago during the early thirties.

In the chaotic conditions which developed it was difficult to set an accurate value on any real estate securities. Property values continued to decline and the results of the reorganization plans were uncertain. A gloomy outlook surrounded business in general, so that there was no appreciable market for real estate securities. When it became evident that defaults were continuing to take place on every type of property, a buyer's market developed. Panic-stricken holders of real estate securities wanted to realize something on their investments and were willing to dispose of them at almost any price. The majority of buyers were interested in these securities from a purely speculative point of view, for the first steps toward reorganization had been taken and there was the possibility of obtaining control of a property by buying up bonds at very low prices.

At first, these defaulted bonds were handled through the established organizations which had been carrying on trading in some of the listed and unlisted real estate securities of the larger issues. Gradually new organizations developed, which specialized in handling real estate issues and frequently centered their activity around the issues of a particular underwriting house. It could not be expected that a very active market would develop for securities which were in default, but a certain amount of trading was maintained throughout the default and reorganization era, with investment interest increasing as the properties began operating under their new financial structures.

### *The Price Trends*

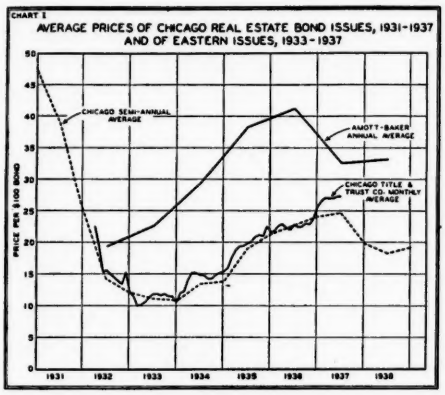
Market opinion of an issue was one type of evidence of value and considerable interest attached to any price information which became available concerning real estate securities. In the spring of 1931 the American Bond Quotation Service undertook the compilation of price data on real estate issues throughout the country, supplying real estate mortgage bondholders with price information. This information, incomplete and limited as it may be at times, is, nevertheless, of real service to the holders of real estate mortgage bonds, certificates of deposit, or whatever type of new security has been provided. It is now possible for the general public to determine the market opinion of real estate issues as expressed in the price bid and asked by the various dealers handling them.

Through use of the quotations compiled by the American Bond Quotation Service a study of prices on the Chicago real estate securities was made beginning in March, 1931. Early each month this service compiled and issued the current "bid" and "ask" prices on each $100 bond from information obtained from dealers. As the new securities appeared, the basis of exchange was reported in the accompanying news section, with the name of the new corporation, if one had been organized; from that date the prices are listed on the new securities. It was not possible to determine at what figure transactions were actually completed or what was the volume of sales, but through the "bid" quotation the movement of prices of real estate securities was studied.

The reported bid prices on the 285 bond issues for March and July, 1931 and January and July, 1932 through January, 1939 were recorded. Quotations were not available for every issue at each of these dates, but bid prices could be obtained on from 220 to 248 issues, prices on all but 7 issues appearing in the

course of the tabulation. Great care had to be used in recording the prices of issues from the date of reorganization in order to translate the price of the new securities into terms comparable with the original $100 bond, if the exchange had not been made on a par-for-par basis. From these data, averages were made in order to facilitate presentation and comparison of different aspects of price trends.

The average prices were prepared semi-annually from July, 1931 through January, 1939 on all real estate mortgage bonds, or the equivalent new securities, and are shown on Chart I. At the begin-




ning of the analysis the average price stood at 47.07 per $100 bond. The sharpest decline, that of 13.88 points, which occurred during any of the six-months intervals, took place from July, 1931 to January, 1932, bringing the total change for the first nine months to 22.15 points and the average price to 24.92. Reference to the default data supplies the reason for this sharp change; the greatest volume of defaults took place in that year, when issues amounting to $162,115,000 failed to meet some provision or requirement.

Heavy defaults continued also in 1932 and by the end of that year only 18% of the volume of bonds were still meeting their obligations. This condition is reflected in a further slump of 10.64 points, bringing the average price to 14.28 in July, 1932. In the three succeeding six-months intervals the price decline continued but at a greatly decreased rate: the change from July, 1932 to January, 1933 was only 2.11; during the first six months of 1933 the drop was 1.06 points; the change of less than .5 point in the latter half of that year brought the average of bond prices to its lowest point in this semi-annual record—10.72 per $100 bond in January, 1934. This marked a total loss of 36.35 points, or a decline of 79.4% on the opening average price of 47.07 in March, 1931.

From this date the average price moved slowly upward; an improvement of 2.69 points was recorded by July, 1934, and an even slighter increase in the latter half of the year. At least the downward trend had ceased and, with the completion of reorganizations of the issues, more confidence in the future of real estate securities was reflected in stronger prices. Very gradual improvement in prices was registered at each succeeding semi-annual interval until by July, 1937 an average price of 24.69 had been attained. It is true that this was a gain of only 13.97 points in the 3 1/2 years which had elapsed since the low of January, 1934, but it meant an improvement of approximately 135% over the average of that date.

But this gain was not maintained; the average price for all bond issues was 19.79 in January, 1938, a decline of 4.90 points. The further decrease of 1.55 points which was recorded in the July, 1938 average was partially recovered by January, 1939 when the price average stood at 19.23.

The behavior in the Chicago real estate bond market as reflected by these

price averages can be compared with conditions in eastern cities by use of the Amott-Baker Realty Bond Averages.[2] This series, prepared by a New York investment house, forms an unusually appropriate unit for comparison with the Chicago study group. The compilation of 200 eastern real estate issues, which were originally outstanding in amount of $500,000 or more, was comparable to the Chicago group as to size of original issue, classes of property, and types of lien, although the proportionate representation in each classification did not correspond exactly.

On Chart I, which contains the semi-annual data on Chicago issues, the annual price averages of the eastern issues at December 31, 1932 through 1938 have also been recorded. The significant fact immediately noticeable is that the average price of the eastern issues was higher than the Chicago average price at all times. The smallest difference[3] between the two prices occurred at the close of 1932 and the opening of 1933 when the low point of 19.4 was recorded on the Amott-Baker series—one year before the low in the Chicago realty bond market. The eastern price average had risen to 22.5 by the next year when the 10.72 low was registered in Chicago, the counter movements markedly increasing the difference between the series. Both series showed annual gains through January, 1937, but the eastern issues re-established themselves at a slightly faster pace so that by the latter date their average price of 43.7 was 19.6 points above the Chicago price. The points of difference between the two series were decreased by January, 1938 when the eastern bond series fell to 32.6, whereas the Chicago series lost only 4.27 points, dropping to 19.79. By the end of another year the eastern series showed a slight improvement in average price while the Chicago bonds were still below the January, 1938 mark, although at a higher point than they had been in July, 1938. Unfortunately it is not possible to hazard an explanation of the continuously higher level of the eastern securities. To discover the reason for the difference in their behavior it would be necessary to go behind the outward similarity of the two groups of securities and that would be a study in itself.

On the assumption that a price trend on a monthly basis would be desirable, some thought was given to the compilation of such a series. But the obstacles presented by scanty data, inaccurate quotations arising from reorganization problems, and insufficient representation of all classes of property caused abandonment of the effort. Instead, resort was had to a monthly price series of Chicago real estate bond issues, which was begun in April, 1932 by the Chicago Title and Trust Company. One hundred issues, which were originally outstanding in the amount of one million dollars or over, were selected for the series; all but five of the issues had been included in the original tabulation for this study group. The same classification of properties was used in this series as for the study group, although the percentage distribution of the issues on the various types of properties varied. A comparison of the composition of the two series with reference to this point showed the following distribution on a percentage basis:

[2] These averages appear in monthly news letters from Amott-Baker, Incorporated.

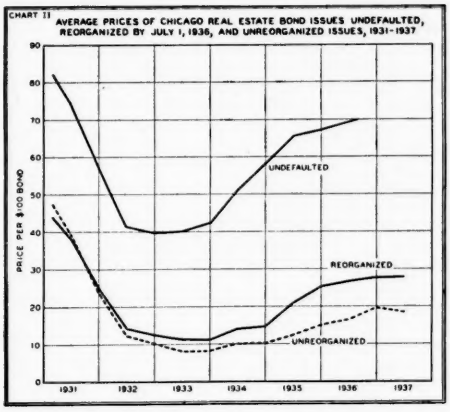
[3] The reader is reminded that the Amott-Baker data are as of December 31 of a given year, whereas the Chicago data are as of January 1; therefore it is necessary to compare December, 1937, e.g., in the former with January, 1938 in the latter.

| Type of Property | C. T. & T. Co. | Study Group |
|---|---|---|
| Apartment | 24% | 28% |
| Apartment hotel | 16 | 21 |
| Hotel | 39 | 21 |
| Office | 5 | 10 |
| Miscellaneous | 16 | 20 |

The C. T. &. T. Co. sample had a smaller percentage of issues in each class of property except the hotel group. These differences could be expected because of the number of small issues included among the 285 bonds of the study group, few of which were on hotel property.

In spite of the variation in the size of issue and the greater proportion of bonds on hotel buildings, the C. T. &. T. Co. series afforded an excellent basis for comparison of monthly with semi-annual price averages (Chart I). Monthly prices showed greater variation of movement and experienced minor cycles of recession and recovery not revealed by the semi-annual figures, but the general trends of the two series were very similar and the price averages were maintained within close range. On the basis of this evidence it appears that the semi-annual price averages, though not revealing every market trend, provide an adequate picture of the Chicago realty bond market.

*Effect of Reorganization.* It is interesting to note price behavior when the bonds are grouped according to their default status at July 1, 1936—the undefaulted issues, those on which reorganization had been completed, and the third group which were still awaiting revision proceedings (Chart II). Each of these three groups cut its own particular course, though the patterns conformed to a general outline of precipitous decline in the early years of the period, followed by gradual improvement, beginning in 1933 for the undefaulted and in 1934 for the defaulted issues. The average prices of the two defaulted groups were very similar until January, 1935, after which time market evaluation and recognition of the revision of properties in the "reorganized" classification carried their average price to a higher level (8.66 points above the "unreorganized" group) in July, 1935. Each

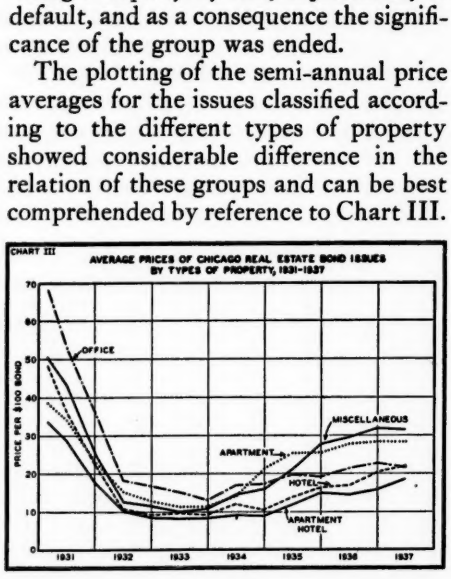



of the two groups showed improvement in the following year, though the average price of reorganized issues was 10.20 points above the reorganized class by July, 1936. Apparently the establishment of the new plans of operation removed many uncertainties regarding the prospects for an issue and meant an increase of from 8 to 10 points in estimation of it as expressed by market price.

The average price for the small group of 13 issues which continued to meet requirements through July 1, 1936 stood at 82.28 when this price series opened. This was 35 to 38 points above the averages on the defaulted issues, and the price differential between the two groups remained at substantially this amount throughout the period of the study, except during 1933 when the series were slightly closer in price. However, when it was found that these issues had sur-

vived the financial difficulties of 1933, confidence in them increased and a higher market price was registered. After July, 1936 a satisfactory price average on these 13 issues classified as "undefaulted at July 1, 1936" was not obtained because the status of these bonds changed rapidly by call, adjustment, or default, and as a consequence the significance of the group was ended.

The plotting of the semi-annual price averages for the issues classified according to the different types of property showed considerable difference in the relation of these groups and can be best comprehended by reference to Chart III.




Over the entire seven-year period the prices on apartment hotel bonds remained the lowest, with the minimum point reported in July, 1933 at an average price of 8.2. The position of this class may be the result of difficulties which have been encountered in achieving profitable operation of apartment hotel properties, even under reorganized set-ups. Large maintenance charges, heavy taxes, and an oversupply of units contributed to this situation and were responsible for the low market evaluation of securities on these buildings.

Prices on apartment issues were about the same as on apartment hotels in the early part of the period. A difference of 3.04 points was shown between these two groups of issues by January, 1934 when the apartment price was 11.36. From this point the price of apartment issues climbed steadily, and rather rapidly in 1935. Vacancies had been reduced over a period of several years and possibilities of profit in operations under the new financial structures were foreseen, or, in many cases, had actually been experienced.

The low price on hotel issues may have been caused, in part, by the fact that for 3/4 of this group reorganizations were still pending on July 1, 1936, with the position of bondholders very uncertain, particularly on leasehold issues. In addition, hotel business had not returned to predepression heights, and earnings even under revised financing seemed likely to remain low for some time.

When the price record was begun in March, 1931, the price on office building issues had not been greatly reduced. Changes began to occur shortly thereafter, so that by July, 1932 there was a total loss of 50.34 points from the opening average price of 68.43 and by January, 1934 the low point of 13.00 was reached. Rise in the price average was shown from that date, but it was neither as rapid nor as constant as for apartment or miscellaneous issues.

The greatest improvement in average price was shown on issues in the miscellaneous group. At March, 1931, the prices averaged at 50.53 from which the drop to 10 was made by July, 1933. After this date a consistent upward movement was maintained in the average price, so that by January, 1937 the high for all classes of property was attained by this miscellaneous group at 31.93.

Issues on every class of property recorded a decline in average price from July, 1937 to January, 1938, ranging from 3.23 points for apartment issues to 6.41 points for those of hotels. Further

decline was in evidence by July, but a slight upward trend was present by January, 1939 on all types of property.

*Earnings and Yields*

The record of past earnings on a security forms the basis upon which the market estimate of future performance is made to determine a price which shall be commensurate with the risks involved under the conditions and trends of the market. On corporations operating in the field of railroads, public utilities, and banking and insurance, regulatory commissions and statutes require the compilation and publication of financial information in a fairly standardized form. The records of governmental units are public property so that the financial standing and tax status of any organization in this category may be investigated and evaluated before its securities are purchased. Industrial corporations applying for listing on the exchanges must submit very complete financial data. As a result, a standard has been established to which other companies in competition for investment funds find it expedient to conform. All information pertinent to the establishment of security prices is also made readily accessible to the public by various reporting services and financial journals, and the market for the issues reflects the changing conditions of the company, the industry, and the business outlook in general.

No regulatory body and no sufficient competitive pressure have been exerted to require periodic submission of reports on the operations of corporations issuing long-term real estate securities. During the entire default and reorganization period earnings data on real estate securities were exceedingly meager and unsatisfactory. Financial statements on the properties were prepared only when they were needed for a court hearing or in connection with the submission of a plan of revision to the security holders, and covered only the interval that had elapsed since the previous report. In the few cases in which figures were available on operations on a yearly basis, it was found that there was no uniform procedure in handling the accrued charges due on the defaulted bonds and also that the validity of some accounts was being questioned, thus making comparisons between issues most unreliable.

With the completion of the reorganizations of the real estate bond issues and the establishment of new financial structures, it could be expected that more complete information would become available on the operations of the properties. A study of the reorganized bond issues showed that some type of earnings data was reaching the market on the majority of these securities. On many of the new organizations the first financial statements were for an irregular period in order to reestablish operations on a calendar-year basis, and reports have continued to be drawn up for similarly irregular periods pending compilation of comparative annual reports. Other properties operated at a narrow margin of profit, or actually at a loss even under reduced fixed charges, so that the earnings on the securities which replaced the $100 bonds were slight, or else an actual deficit existed. Differences in accounting procedure in handling the depreciation charge reduced the value, for comparative purposes, of reports on earnings of a few issues.

In order to study the influence which the publication of earnings information exerts on the market for a security, it is necessary to learn the amount earned per income bond or per share of stock during the fiscal year and the market price for that particular security a few months after the close of the fiscal year, when

it might be expected that the earnings figures would be made public. Last spring it was possible to obtain earnings information on only 16 of the entire group of 127 issues which had been reorganized by July 1, 1936. By the spring of 1939 earnings had been reported on many more properties from the classification of "reorganized by July 1, 1936," and on several properties on which reorganization had been completed since that date. A total of 49 securities furnish the basis for a study of the relation between earnings, before depreciation, and market price, at about the time earnings statements were published.

All types of properties are represented among those operating at a profit, though the apartment classification reported the greatest number of cases. The original bonds have been replaced in this group by 24 issues of common stock, 20 income bond series, and 5 trusts which have released certificates of beneficial interest. Because of circumstances of the reorganization process, many operating units have found it inconvenient to return to a calendar-year basis and have adopted a convenient date for the close of the fiscal year. This results in earnings data on real estate securities reaching the market at various dates throughout the year. In Table I the relation of earnings to market price has been presented on a percentage basis, together with the name of the property, type of security, and the date of the close of the fiscal year.

In the classification of apartment securities the per cent earned on market price ranged between 5.9 and 16.7 on the 1937 data, and between 8.1 and 20.5, with two exceptions, on the 1938 data. This general movement of a few points upward was attributable to an increase in earnings on the securities and a decrease in market price—the exception being the Commonwealth Surf income bonds on which the earnings decreased while the market price advanced 1 1/2 points. The percentages on the apartment hotel group ranged from 8.8 to 22.1, with one issue reporting 35.5 on 1937 figures—a slightly higher range than on the apartment issues. But the data for 1938 do not show increases throughout the group, for higher earnings were reported while market prices also advanced on four securities. The four issues on hotel properties and the five on office buildings which reported earnings give such limited evidence that it is impossible to note any trends from the percentages derived. The percentages earned on market price in 1938 for the miscellaneous classification show a narrow range, which might indicate a more consistent analysis of the earnings on these properties by the market. At best, this compilation presents one view of market action of real estate securities and might well serve as a starting point for further observation as additional data become available regarding the operation of these properties.

Holders of some of the reorganized real estate securities have received payments on them from time to time and gradually more properties are finding it possible to pay some interest or dividends as earnings and working-capital positions improve. The per cent of yield on the amount paid on securities in 1935 through 1938, based on the market price in the spring of the following year, has been prepared as a limited but actual picture of the way the market has responded to this criterion of investment worth. This material is given in Table II. No doubt other issues should be included in the "paying" group, but this list represents the real estate securities on which payments were reported in Moody's *Manual of Investments* and the

*Weekly News Bulletin*, and for which appropriate price quotations could be obtained.

Each year showed a greater number of securities on which some return was offered—25 issues reporting payments in

TABLE I. PER CENT EARNED ON MARKET PRICE OF REAL ESTATE SECURITIES (BEFORE DEPRECIATION) AT APPROXIMATE DATE OF PUBLICATION OF EARNINGS

| Type of Property | Type of Security | Close of Fiscal Year | Per Cent Earned on Market Price Fiscal Year Ending in: | | |
|---|---|---|---|---|---|
| | | | 1936 | 1937 | 1938 |
| *Apartments* | | | | | |
| Lake View Ave. Bldg. | Inc. Bonds | 2/28 | — | 10.3 | 11.2 |
| Aquitania Apts. | Com. Stock | 4/30 | — | 14.8 | 32.0 |
| Narragansett Apts. | Benef. Int. | 4/30 | — | 11.9 | 17.3 |
| Edgewater Chateau Apts. | Benef. Int. | 4/30 | — | 16.5 | 20.5 |
| 4940 East End Ave. | Benef. Int. | 4/30 | — | 16.2 | 18.9 |
| 5510 Sheridan Rd. | Benef. Int. | 4/30 | — | — | 15.1 |
| Barry Bldg. | Com. Stock | 5/31 | — | 6.8 | 17.5 |
| 1400 Lake Shore Dr. | Inc. Bonds | 6/30 | 10.0 | 8.0 | 13.8 |
| 20 Cedar St. | Com. Stock | 6/30 | 4.8 | 7.0 | 12.2 |
| Commonwealth Surf | Inc. Bonds | 8/31 | — | 14.1 | 11.8 |
| 5801 Dorchester | Inc. Bonds | 8/31 | — | — | 26.8 |
| Whitehall Apts. | Com. Stock | 8/31 | — | 5.9 | 9.5 |
| Edgewater Beach Apts. | Inc. Bonds | 8/31 | — | — | 12.7 |
| Fullerton Parkway | Inc. Bonds | 10/31 | — | — | 8.1 |
| 3300 Sheridan Rd. | Inc. Bonds | 10/31 | — | 7.2 | 8.6 |
| 405 Fullerton Pkwy. | Inc. Bonds | 11/30 | 7.8 | 16.7 | 19.5 |
| Bryn Mawr Apts. | Com. Stock | 12/31 | — | 10.5 | 18.3 |
| Parkway Bldg. | Inc. Bonds | 12/31 | 10.7 | 15.6 | — |
| 3500 Sheridan Rd. | Com. Stock | 12/31 | 1.8 | — | — |
| *Apartment Hotels* | | | | | |
| Ambassador East | Inc. Bonds | 3/31 | — | — | 15.0 |
| 181 Lake Shore Dr. | Com. Stock | 3/31 | — | 12.4 | 19.6 |
| Canterbury Court | Inc. Bonds | 4/30 | — | 12.5 | 12.5 |
| Park Dearborn | Com. Stock | 4/30 | — | 35.5 | 31.7 |
| Lincoln Park Arms | Inc. Bonds | 5/31 | 43.5 | 8.8 | 14.2 |
| Embassy Corp. | Com. Stock | 6/30 | — | 22.1 | 37.8 |
| Graemere Hotel | Inc. Bonds | 6/30 | — | — | 5.8 |
| Park Lane Apt. Hotel | Com. Stock | 6/30 | — | — | 8.8 |
| Lawrence Hotel | Inc. Bonds | 10/31 | — | — | 13.4 |
| Orrington Hotel | Com. Stock | 12/31 | 10.7 | 19.8 | 18.6 |
| 6300 Kenmore Ave. | Com. Stock | 12/31 | — | 15.3 | — |
| 1061 Rosemont | Com. Stock | 12/31 | — | 11.0 | 25.0 |
| *Hotels* | | | | | |
| Loop Hotel | Com. Stock | 6/30 | — | 15.8 | 34.5 |
| Chicago Allerton House | Com. Stock | 10/31 | — | — | 13.8 |
| Lincoln Clark Hotel | Com. Stock | 12/31 | 21.0 | 18.9 | — |
| Stevens Hotel | Inc. Bonds | 12/31 | — | 20.7 | 16.6 |
| *Offices* | | | | | |
| Bankers Bldg. | Com. Stock | 8/31 | — | 14.4 | 8.0 |
| 520 N. Michigan | Inc. Bonds | 11/31 | — | 18.4 | 19.2 |
| Col.-Venetian-Stevens | Inc. Bonds | 12/31 | — | 9.3 | — |
| 208 S. LaSalle | Com. Stock | 12/31 | — | 3.2 | 4.2 |
| Wacker-Wells | Com. Stock | 12/31 | 8.9 | 10.6 | — |
| *Miscellaneous* | | | | | |
| Congress Bldg. | Com. Stock | 3/31 | — | — | 10.5 |
| Tower Bldg. Corp. | Com. Stock | 3/31 | — | — | 13.2 |
| Milwaukee-Diversey | Com. Stock | 6/30 | — | — | 12.1 |
| Franklin-Adams | Inc. Bonds | 8/31 | — | 13.4 | 13.7 |
| Lincoln-Robey Bus. Blk. | Com. Stock | 9/30 | — | — | 15.9 |
| Harding Bldgs. | Inc. Bonds | 12/31 | 1.8 | — | — |
| 1617 Belmont Ave. | Com. Stock | 12/31 | 9.7 | 16.0 | — |
| South Bldg. | Inc. Bonds | 12/31 | — | 7.8 | 7.5 |
| Trianon Com. Props. | Benef. Int. | 12/31 | 3.3 | 12.9 | — |

1935, 37 in 1936, 47 in 1937, and 63 in 1938. Three classes of property—namely, apartments, apartment hotels, and miscellaneous—had approximately 23% of the total number of their issues considered in this study reporting payments.

TABLE II. YIELD FIGURED ON THE ANNUAL PAYMENTS MADE ON REAL ESTATE SECURITIES AND SPRING MARKET PRICE

| Type of Property | Type of Security | Per Cent of Yield on Market Price | | | |
|---|---|---|---|---|---|
| | | 1935 | 1936 | 1937 | 1938 |
| *Apartments* | | | | | |
| Barry Apts. | Com. Stock | 6.5 | 8.3 | * | 11.4 |
| Bryn Mawr Apts. | Inc. Bonds | — | 5.8 | 10.0 | 13.4 |
| Chatelaine Towers | Benef. Int. | 10.8 | 9.3 | 5.3 | 10.0 |
| Delaware Place Apts. | Com. Stock | — | — | 10.0 | 11.1 |
| Drake Towers | Inc. Bonds | 8.0 | 7.5 | 12.0 | 15.1 |
| East Oak Street (40) | Inc. Bonds | — | — | — | 20.8 |
| Edgewater Beach Apts. | Inc. Bonds | — | 9.7 | 11.1 | 7.0 |
| 5510 Sheridan Rd. | Benef. Int. | 11.1 | 10.4 | 12.5 | 9.6 |
| 1540 Lake Shore Dr. | Com. Stock | 11.4 | 7.5 | 4.5 | 5.0 |
| 5801 Dorchester | Inc. Bonds | — | — | — | 7.0 |
| 5240 Sheridan Rd. | Com. Stock | 4.9 | 3.9 | 12.1 | 10.0 |
| 4950 Powhatan | Inc. Bonds | 3.1 | 6.5 | 9.6 | 9.6 |
| 4940 East End Ave. | Benef. Int. | 7.7 | 12.5 | 14.5 | 10.8 |
| 405 Fullerton Pkwy. | Inc. Bonds | 5.3 | † | 7.3 | 15.2 |
| 1400 Lake Shore Dr. | Inc. Bonds | — | 2.0 | 2.3 | 2.2 |
| Fullerton Pkwy. Towers | Inc. Bonds | — | — | 2.1 | 2.3 |
| Jeffrey-Cyril | Benef. Int. | 15.0 | † | 17.0 | 9.5 |
| Lake View Ave. (2440) | Inc. Bonds | 4.0 | 4.2 | 5.4 | 7.1 |
| Narragansett | Benef. Int. | 24.0 | † | 20.4 | 5.7 |
| Parkway Bldg. | Inc. Bonds | 8.5 | 9.2 | 12.5 | 10.6 |
| Sheridan-Brompton | Benef. Int. | — | 5.4 | 17.8 | 10.5 |
| Sheridan-Grace | Com. Stock | 8.7 | 4.0 | 11.4 | 6.6 |
| South Shore Towers | Inc. Bonds | — | — | — | 4.3 |
| 3500 Sheridan Rd. | Com. Stock | 7.0 | 8.0 | 5.0 | 6.3 |
| 3300 Lake Shore Dr. | Inc. Bonds | — | — | — | 7.0 |
| 2920 Commonwealth Bldg. | Inc. Bonds | 4.8 | 4.6 | 3.8 | 5.0 |
| Whitehall Apts. | Com. Stock | — | 4.8 | 5.2 | 6.6 |
| *Apartment Hotels* | | | | | |
| Canterbury Court | Inc. Bonds | 11.8 | 13.2 | 6.4 | 6.0 |
| Cornell at 54th | Benef. Int. | — | 8.0 | 7.7 | * |
| 14 W. Elm | Com. Stock | — | 7.4 | 15.0 | 4.0 |
| Georgian Hotel | Inc. Bonds | — | 4.7 | 7.5 | 7.0 |
| Lincoln Park Arms | Inc. Bonds | 20.0 | 7.3 | * | * |
| Orrington | Com. Stock | 4.2 | 6.3 | † | 5.1 |
| Park Dearborn | Com. Stock | — | — | 22.7 | 5.7 |
| Pearson Hotel | Benef. Int. | — | — | 5.7 | † |
| Raymond | Benef. Int. | — | — | — | 10.0 |
| Sheridan Belmont | Com. Stock | — | — | — | 10.0 |
| 616 N. Rush | Com. Stock | — | — | 9.1 | † |
| 6300 Kenmore | Com. Stock | — | — | — | 17.4 |
| Windermere | Inc. Bonds | — | — | 11.1 | 7.0 |
| 1061 Rosemont | Com. Stock | — | 3.3 | 11.5 | 13.6 |
| *Hotels* | | | | | |
| Lincoln Clark | Inc. Bonds | — | 8.3 | 8.0 | 7.4 |
| 162 East Ontario | Com. Stock | — | — | † | 10.4 |
| Sherman Hotel | Inc. Bonds | — | — | — | 7.9 |
| Stevens Hotel | Inc. Bonds | — | — | — | 3.2 |
| *Offices* | | | | | |
| Bankers Bldg. | Inc. Bonds | — | 6.8 | 14.4 | 9.2 |
| Chicago Builders Bldg. | Inc. Bonds | — | — | 7.4 | 11.8 |
| Col.-Venetian-Stevens | Inc. Bonds | — | — | — | 2.9 |
| 520 N. Michigan | Inc. Bonds | — | 3.3 | 8.8 | 11.9 |
| 1425 S. Racine | Com. Stock | 17.2 | 12.8 | 6.7 | 8.4 |
| Garland Court | Inc. Bonds | — | — | — | 5.5 |
| 333 N. Michigan | Com. Stock | — | — | — | 2.2 |
| 300 Adams | Com. Stock | — | — | — | 15.9 |
| 208 S. LaSalle St. | Com. Stock | — | 6.8 | 9.1 | 7.9 |
| Wacker-Wabash | Inc. Bonds | — | — | — | 5.9 |
| Wacker-Wells | Com. Stock | 4.5 | 6.3 | 11.4 | 11.9 |
| *Miscellaneous* | | | | | |
| Chicago Bdwy. Props. | Benef. Int. | — | — | 11.8 | 15.0 |
| Chicago P.O. Bldg. | Inc. Bonds | — | — | 8.9 | 6.0 |
| Chicago Prod. Dis. Trust | Inc. Bonds | 5.8 | 4.8 | † | 4.5 |
| Diversey Bldg. | Inc. Bonds | 3.0 | 4.8 | 10.0 | 6.5 |
| Franklin-Adams | Inc. Bonds | 7.7 | 4.8 | 11.7 | 11.7 |
| Lincoln-Robey Bus. Blk. | Com. Stock | — | — | 7.5 | 13.2 |
| Milwaukee-Diversey | Com. Stock | — | 5.1 | 8.7 | † |
| Milwaukee-Rockwell | Com. Stock | — | — | 20.0 | † |
| Quincy Station P.O. | 5% Bonds | — | — | — | 11.1 |
| 1617 Belmont Ave. | Com. Stock | — | 5.0 | 9.1 | 10.6 |
| South Bldg. | Inc. Bonds | — | — | — | 7.7 |
| 318 Adams-Style Center | Inc. Bonds | 8.7 | 7.7 | 11.1 | 10.0 |
| Trianon Com. Props. | Com. Stock | — | — | — | 6.2 |

* Information incomplete.

† No payment made.

Payments in the apartment group have been made over the greatest number of years which may be explained by the fact that defaults on these properties were among the first, reorganizations were undertaken sooner (and in many cases were less complicated), and thus the revised organizations were put into operation at an earlier date. About 19% of the total office issues are in the group reporting payments to security holders, but only 14% of the hotel issues made payments in 1938. The yield on 1938 payments on the majority of all issues falls within a range of 7 points, there being 48 issues with a yield between 4.3% and 11.7%. If the lower limit is moved down to 2.2%, all but 10 issues are included within a 9.5 point range. There is sufficient material to view the position of yield on the apartment issues for each year, and the tendency for the majority of yields on this class of issue to fall between 2.0% and 12.5% is shown.

*Conclusion*

Prior to the default era, the underwriting houses were the center for all information and services connected with real estate bond issues. The fact that conflicting interests were served by the underwriting organization in its role of underwriter, paying agent, and trustee for a security has aroused serious criticism, but the type of investor interested in these bonds was, in part, responsible for the situation. This was the first experience in any investment undertaking for many small purchasers and their contacts were usually limited to the source from which the issues had been acquired—the underwriting house. It was looked to as a market and prices close to par could be maintained until the default of the bond issues accompanied by the failure of many of the underwriting houses made this an impossibility.

Trading had been carried on by general investment houses in some of the real estate securities prior to defaults and for a time formed the only market. Some organizations have now been formed which specialize in real estate securities, but the market is very disorganized and comparatively disinterested. Information on earnings and operations of the properties is not readily available and, coupled with lack of astivity, means that prices respond less readily to changing conditions. Improvements have been shown in the market as more issues are removed from receivership and it is possible that information on earnings will become more accessible when operations have been maintained on the new basis for a longer period.

In this study of real estate mortgage bonds in the Chicago area an attempt has been made to present a general picture of what has occurred in the history of real estate bond financing in this city which was the center for this type of financial activity. The data presented should serve as background for real estate securities on Chicago properties and as a basis for further study of their investment possibilities.

# The TVA Investigation

*By* D. L. MARLETT*

IN a majority report of 259 pages (not counting numerous charts), supplemented by Appendices A and B of 324 pages and 529 pages, respectively, the Congressional Joint Committee on the Investigation of the Tennessee Valley Authority[1] on April 3, 1939 gave TVA a clean bill of health. It concluded that the administration of the TVA Act has, on the whole, been economical and efficient. A minority report, signed by three of the nine committee members,[2] condemned the Authority and recommended its reorganization. The reports culminated a year's investigation, involving the expenditure of $75,000.[3] Since a copy of the minority report was not available in time for analysis here, this review is confined to the majority report.[4] The August issue of the *Journal* will carry a discussion of the minority report.

## *Unified River Control*[5]

The Committee emphasizes that the purpose of Congress in establishing the Authority was to provide for unified development of the Tennessee river valley —namely, navigation, flood control, production and use of electric power and fertilizer, national defense, reforestation, and general agricultural and industrial development. Its investigation, says the Committee, was directed with this fundamental aim of a planned unified multi-purpose development in view.

*The Authority's System.* Several dam-systems are referred to in the report. They are as follows:

3-dam System—Wilson, Wheeler and Norris dams.

4-dam System—Add Pickwick dam. (The four dam-system was the one in operation at the time of the Committee's investigation.)

7-dam System—Add Guntersville and Chicamauga dams, scheduled for completion in 1940, and Hiwassee dam, scheduled for completion in 1941. (These dams are now under construction.)

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* Assistant to the Executive Officer, Illinois Commerce Commission; Lecturer in Economics and Public Utilities, Northwestern University.

[1] The Joint Committee was created by Pub. Res. No. 83 (75th Cong., c. 61, 3d sess., S. J. Res. 277) approved April 4, 1938, with a membership of five senators and five representatives.

[2] The majority report was signed by Senators Donahey (Dem., Ohio), Chairman, Mead (Dem., N.Y.), Schwartz (Dem., Wyo.) and Frazier (Rep., N.D.) and Representatives Thomason (Dem., Tex.) and Barden (Dem., N.C.). The minority report was signed by Senator Davis (Rep., Penn.) and Representatives Jenkins (Rep., Ohio) and Wolverton (Rep., N.J.). One vacancy existed on the Committee.

[3] The original appropriation of $50,000 was supplemented, pursuant to recommendations of a preliminary report dated January 24, 1939, by an additional appropriation of $25,000. (Pub. Res. No. 2, 76th Cong., c. 3, 1st sess., S. J. Res. 38, approved February 10, 1939.)

[4] The report is organized into four parts, dealing with the purpose of the TVA, administration of the Authority, finances, and the TVA program.

Appendix A contains special reports and exhibits, including a report of the Committee's auditor, W. O. Heffernan; a survey of TVA's personnel department by Dr. Leonard D. White of the University of Chicago; a report on REA activities in the Tennessee Valley by W. E. Herring; and an economic analysis of the TVA "yardstick" by Leland Olds of the New York Power Authority.

Appendix B consists of the report of the Committee's Chief Engineer, T. A. Panter of the Los Angeles Bureau of Power and Light, whose death was reported on March 12, 1939, just prior to release of the final report. Mr. Panter was assisted by an engineering committee composed of J. I. Metcalf and A. E. Schultz of the New York Power Authority, and Dr. Paul J. Raver of Northwestern University. Mr. Francis Biddle, recently appointed Judge of the Circuit Court of Appeals, Third Circuit, served as the Committee's general counsel and doubtless was largely responsible for drafting the report. The report is based upon 15,470 pages of testimony by 101 witnesses who submitted 611 exhibits. Witnesses included members of the TVA Board and its staff, representatives of privately owned utility companies, and special consultants engaged by the Committee.

[5] See Pt. I and c.'s 10 and 11 in Part IV of the Committee's Report.

10-dam System—Add Gilbertsville, Watts Bar and Coulter Shoals dams, scheduled for completion by the close of 1945. (Preliminary work has been done on the Gilbertsville dam but no appropriations have yet been made for the Watts Bar and Coulter Shoals dams.)

11-dam System—This system includes the Fontana dam for which Congress refused appropriations.

The installed power capacities of the Authority's systems are described as follows:[6]

3-dam system: initial installation, 348,000 kws.; "normal" capacity, 490,000 kws.

4-dam system in operation at the time of the investigation: 420,000 kws.

7-dam system: 809,000 kws.

10-dam system, 60% load factor: 1,401,500 kws.

The Committee uses the 10-dam system in treating the question of allocation of investment and estimated annual revenues and expenses of the various functions involved in unified river control.

The Committee praised the quality of TVA's engineering staff and found that the construction work on the dams has been efficiently and economically performed. Credit for this performance is attributed unequivocally to the competence of the former Chairman, Dr. A. E. Morgan, who was responsible for the major construction policies and the character of the engineering staff. The engineering work on the Authority's transmission system, under the general direction of Mr. Lilienthal, was also approved as well and efficiently done.

*Objectives of the System.* According to the Committee, the primary function of the dams and reservoirs is to maintain a 9-foot navigation channel from Knoxville to the mouth of the Tennessee. Flood control is complementary rather than conflicting with the needs of navigation. Power production is secondary in the sense that the amount of firm power available is limited by the other uses of the water, for the Act directs that the stream flow shall be regulated primarily to promote navigation and control floods. Improvement of forestry and agriculture is related to river control through soil and water conservation, including the fertilizer program. National defense in the Tennessee Valley, however, is hardly distinguishable from the public interest in general, says the Committee, and is chiefly a matter of producing a balanced economy.

The Committee concludes that, in general, a sincere effort has been made to follow the declared objectives of the Act for unified river control, although in some lines progress has been slow because of obstacles encountered. The report emphasizes that, in judging drawbacks inevitable in any large program, the fact must be kept constantly in mind that unified river control, under federal authority, provides the only method thus far tried for solving a network of problems that are by their nature beyond the scope of private initiative, or of state or local governments.

*Possible Conflict of Objectives.* The Committee relies on the testimony of the Chief of TVA's Water Control Planning Department on the question of possible conflict in the requirements of navigation, flood control, and power production in the operation of the Authority's system. According to this testimony, use of the river is controlled by the policy of operating the reservoirs primarily for navigation and flood control as required by the Act.[7] Navigation is the principal

[6] See Engineering Report, Appendix B, p. 57. A breakdown shows continuous prime, dependable prime-peak, and secondary-peak capacity; also primary, secondary, and dump and off-peak energy.

[7] Instructions for release of water, of which 63 were given out during the fiscal year ended June 30, 1938, are issued by the Chief of the Water Control Planning Department, subject to review by the Chief Engineer.

controlling factor in summer, while flood control takes precedence in winter, although flood control benefits navigation by reducing the current velocities at times of high water. The reservoirs are kept low during the winter months and, after danger of major floods is past in the spring, they are permitted to fill in preparation for the summer dry season.

According to the report, only slight conflict exists between requirements of flood control and power production—a conflict which any qualified engineer can adjust in practice without trouble. In multiple-use operation it is necessary to release water during a flood to provide for power requirements, but the amount released is so small in comparison with the flood flow as to produce no measurable effect. It is also necessary to waste water in the flood season in drawing down the reservoirs to prepare for possible floods. In addition, power production is affected by the necessity to fluctuate the water level to control malaria-breeding mosquitoes. However, a considerable part of the waste can be salvaged in the form of dump power by suitable arrangements for exchange with systems using steam generation.

The Committee recommends that Congress give consideration to a provision for periodic check of the water-control policies of the Authority, to be made by independent engineers competent to review and report on water-control operations. The purpose of such a provision would be to assure strict adherence to the requirement of the TVA Act that flood control and navigation shall take precedence over power.[8]

*Navigation.* The section on navigation presents statistics on actual movement of traffic on the Tennessee River and estimates of river traffic and savings to shippers that would accrue upon completion of the 9-foot depth all the way to the Mississippi River. Since the latter will not be accomplished until completion of Gilbertsville Dam, the present river traffic is largely local in character. Considerable discussion is devoted to the relative merits of the high-dam and low-dam systems. The Committee accepts the conclusions of its engineers that the high-dam system constructed by the Authority (which inherited the policy of constructing high dams from the Army Engineers) has important advantages over the low-dam system, including fewer locks with broader and deeper channels and consequent savings in traveling time and fuel costs, more favorable conditions for landing docks and freight-handling equipment, and provisions for flood control and power production which could not be made with the low-dam system.[9] The Committee concludes that the high-dam system is justified, that the present trend is toward an increase of traffic on inland waterways, and that the benefits—primarily in savings in freight costs—from improvement of the Tennessee River appear to be sufficient to justify payment by the taxpayers for that portion of the Authority's program allocated to navigation.

*Flood Control.* The section of the report dealing with flood control points out that Chattanooga on the Tennessee River and Paducah and Cairo on the Ohio River are the principal communities benefiting from the Authority's flood-control program. The 10-dam system planned for completion in 1945 is esti-

[8] Dr. A. E. Morgan criticized the water-control operations and recommended that TVA's electric sales department be separated from the river-control and power-production operations. The Committee disagreed with this suggestion and made the recommendation described above.

[9] See Engineering Report, Appendix B, pp. 28–38.

mated to reduce flood heights at Chattanooga by 7 or 8 feet, but three additional reservoirs and additional levees, estimated to cost from $80,000,000 to $100,000,000, would be required to give Chattanooga "complete protection"—i.e., control of a 77-foot flood, 20 feet higher than the highest flood on record. The Committee suggests that the Authority's system may have been responsible for saving Cairo, Illinois, from the 1937 flood by lowering the flood crest several inches. The Committee concludes that the Authority is now organized in such a way as to control floods on the Tennessee River; to cooperate in reducing floods on the Ohio and Mississippi Rivers; and, after completion of Gilbertsville Dam, to reduce flood crests considerably as far down as Memphis on the Mississippi River, with a substantial effect on the prevention of flood losses.

*Power Program.* A considerable portion of the report is devoted to the Authority's power program. Special attention is given to the allocation of investment and costs, to estimates of revenues and expenses, to analysis of rates and contracts, to an appraisal of the "yardstick" idea, and to a review of the relationship of the Authority's power policy to private companies.

### *Allocation of Investment and Costs*[10]

For purposes of accounting, the cost of the Authority's dams is considered to be entirely chargeable to navigation, flood control, and power, with no allocation for the fertilizer, agricultural, and national defense programs. The Committee adopted the conclusions of its engineering staff that the Authority's allocation for the 10-dam system is correct within reasonable limits of error and that the Authority's allocation for the 3-dam system, which was approved by the President, is consistent with the later figures for the 10-dam system.[11]

In reaching its conclusion that the Authority's allocations may be taken as sufficiently accurate for a guide in the formation of public policy, the Committee reviewed the following theories:

(1) The no-allocation theory, advanced by Charles W. Kellogg of the Edison Electric Institute.
(2) The incremental-power-investment theory, which was advanced by Dean Edward L. Moreland in behalf of Commonwealth & Southern Corporation.
(3) The alternative-justifiable-expenditure theory, which formed the basis for the allocation reports of the Authority.

(1) According to the so-called no-allocation theory, no portion of TVA's total investment should be charged to functions other than power, on the ground that private power companies must bear all costs of any hydro-electric developments they undertake even though other benefits, such as navigation, result. The Committee found the no-allocation theory to be without merit, since the declared objectives of the Act and the findings of fact of the trial court in the 18-Power Companies case show that the projects of the Authority are designed primarily for improvement of navigation and control of floods, rather than exclusively for power.

(2) According to Dean Moreland's

[10] See pp. 151–161 of the Committee's report and pp. 42–75 of the Engineering Report, Appendix B. The latter contains tables with detailed classification of investment by functions, exclusive of investment in transmission facilities, which is covered at pp. 95–111 of Appendix B.

[11] This conclusion on the 3-dam system allocation disposed of Dr. Morgan's criticisms of the Board's methods of allocation. The Committee did find, however, that the Authority failed to comply with the statutory requirement that an allocation report be made to Congress by January 1, 1937, since the report was not submitted until June 16, 1938, for several reasons cited by the Committee as an adequate explanation.

incremental-power-investment theory, applied to the Authority's proposed 11-dam system, the total estimated cost of programs to provide navigation and flood-control benefits equivalent to those provided by the multi-purpose program is deducted from the total investment in the system to determine the amount to be allocated to power. The alternative navigation system used in this allocation was a low-dam system designed by army engineers. The alternative flood-control system used by Dean Moreland in his allocation depended upon an estimate of a witness—a Mr. Ford Kurtz, hydraulic engineer of J. G. White Engineering Corporation—in the 18-Power Companies case. These estimates of alternative systems, according to the Committee, are "extremely low" and therefore result in allocating a high percentage of the Authority's total investment to power. Dean Moreland's percentages for the 11-dam system, compared with the Committee's engineers' allocation for the 10-dam system, are as follows:

| Function | Moreland, 11-dam System | Committee's Engineers' 10-dam System |
|---|---|---|
| Navigation..... | 15.1% | 24.1% |
| Flood control..... | 13.3 | 20.6 |
| Power..... | 71.6 | 55.3 |

These figures may be compared with those approved by the President for the 3-dam system, which were: navigation, 28%; flood control, 20%; and power, 52%. The Committee sees no reason for rejecting the findings of its engineers and concludes that Dean Moreland's estimates are not acceptable.[12]

(3) The alternative-justifiable-expenditure theory was used by TVA in its allocations and was approved by the Committee and its engineers. Under this method the total cost of the system is divided into two classes: (a) the direct costs of navigation, flood control, and power are computed separately for each function and consist of the amount that would be saved by eliminating that function from the multiple-purpose program; and (b) the remaining common costs are allocated to each function in accordance with the following steps:

(1) For comparison with the direct costs as found in (a) above, the costs of alternative one-use systems are computed separately for navigation, for flood control, for power.

(2) The direct costs of each function of the multiple-purpose projects are deducted from the alternative single-purpose costs of that function and the sum of these remainder-costs of the single-purpose projects is computed for comparison with the common costs of the multi-purpose system.

(3) The common costs of the multiple-purpose system are then allocated to the three functions in the ratios of the respective single-purpose remainder-costs to the sum of such remainder costs.

Colonel Parker, Chief Engineer of TVA,

[12] The Committee points out that the army engineers recommended the high-dam system, rather than the low-dam alternative navigation system used by Dean Moreland in his allocation, and that no claim was made that the low dams would be as good for navigation purposes as high dams. Also, the Committee notes that the alternative flood-control system adopted by Dean Moreland from the 18-Power Companies case gave no consideration to the effects of the system below the mouth of the Tennessee River, whereas the TVA Act calls for consideration of the Mississippi River as well as the Tennessee River drainage basins. In addition, says the Committee, the trial court in the above case found that the projects adopted by the Authority are the only types of engineering works which will afford effective flood control on both rivers and that the high-dam system will provide navigation improvement substantially superior to that of the low-dam system. If TVA's estimates of adequate alternative projects for navigation and flood control are used in Dean Moreland's formula, says the Committee, the allocation to power would be substantially *less* than that actually adopted by the Authority (37.10% as compared with 55.5%). Finally, the Committee concludes that the extended studies and experience of TVA's engineers should be given greater weight than the testimony of Dean Moreland who relied upon estimates of other engineers without qualification and adequate analysis.

presented estimates on the application of this allocation theory for the 10-dam system.[13] The Committee's engineers made certain minor adjustments in the Authority's figures for the 10-dam system and added an estimated cost of $75,500,000 for transmission charged wholly to power, thus obtaining a somewhat higher total investment charged to power. The figures of the Committee's engineers follow:

| Function | Amount | Percent |
|---|---|---|
| Navigation | $121,789,873 | 24.1% |
| Flood control | 104,061,813 | 20.6 |
| Power and transmission | 279,488,335 | 55.3 |
| Total | $505,340,021 | 100.0% |

TVA's figures adjusted to include transmission show 24.0% for navigation, 20.5% for flood control, and 55.5% for power. All these figures (based on a 60% load factor and general service use[14]) include interest during construction and workmen's compensation, but exclude depreciation allowance and working capital.[15] Thus, the results of the Committee's engineers are practically identical with those of TVA. The Committee adopts the conclusions of its engineering staff that the Authority's figures may be accepted "as being within reasonable limits of what a group of impartial engineers and economists would determine." It will be recalled that TVA conferred at length with many independent engineers and economists before adopting its allocations.[16]

### *Estimated Annual Revenues and Expenses*[17]

To determine the feasibility of the Authority's program in advance of final construction, the Committee considered it necessary to adopt a theoretical allocation of the estimated *capital* costs for the Authority's scheduled 10-dam system and to find whether the *annual* costs allocated to power on this basis are covered by anticipated revenues. The estimated revenues of the witnesses were in very close agreement, but wide differences existed on estimated annual costs.

The Committee accepts the estimates of its engineering staff as representing as nearly accurate a forecast of the Authority's operating results as present information permits. To estimate annual costs for the 10-dam system, the engineering staff used the estimated capital investment for power of $279,488,335, deducted $4,778,596 for accrued depreciation at Wilson Dam, and added $4,000,000 for general property and $3,000,000 for working capital, thus making a total power investment of $281,710,000 (round figure). On this investment the engineering report computes annual costs, assuming a 60% load factor and general service, with the investment amortized over a 50-year period on a sinking-fund basis and with provision for depreciation of property of less than 50-years' life on a sinking-fund basis, as follows:[18]

| | |
|---|---|
| Interest on Investment at 3.25% | $ 9,155,575 |
| Amortization at 0.825% | 2,324,108 |
| Renewals and Replacements at 0.95% | 2,653,000 |
| Operations and Maintenance at 1.1% | 3,130,000 |
| Taxes and Insurance at 1.2% (equals 13½% of gross wholesale revenues) | 3,284,550 |
| Total Annual Costs at 7.325% | $20,547,233 |

[13] See pp. 157–8 of the Committee's Report.

[14] In assuming "general service," all firm and secondary power sales to industrial companies are assumed to be cancelled and the power sold under standard rates to regular customers.

[15] Engineering Report, Appendix B, p. 12.

[16] The Engineering Report also reviews allocations for the 3-dam and 7-dam systems, but the Committee confines its report to the 10-dam system. See table, Appendix B, p. 74; this table excludes transmission investment of $75,500,000.

[17] See pp. 168–77 of the Committee's Report and pp. 52–75, 104–64 of the Engineering report, Appendix B. A summary will be found at p. 142 of Appendix B for the 3-, 7-, and 10-dam systems; also see pp. 218–43.

[18] Engineering Report, Appendix B, pp. 142 and 238.

(*Footnote 18 continued on page 218*)

The engineers estimated the corresponding annual power revenues to be $24,330,000, thus leaving an annual surplus of $3,783,000.[19]

In contrast with these results, Mr. Krug of the TVA estimated an annual surplus of $4,624,785 for the 11-dam system and Dean Moreland estimated an annual *loss* of $4,039,000 for the 11-dam system. Dean Moreland's estimates are affected, of course, by his investment allocation which, as noted above, the Committee refused to accept. Practically all of the difference between these estimates is found in the interest and depreciation items. Moreland calculated interest at 3½% on his larger power investment to be $12,212,000 per year, whereas Krug figured interest at 3% on his power investment to be $7,673,315. Moreland figured depreciation on a 30-year life for equipment and a 50-year life for dams to be $4,300,000 per year (equivalent to 1½% on a sinking-fund basis), whereas Krug's depreciation allowance of $2,304,000 was based upon estimates of the life of each item of equipment. Dean Moreland also thought an additional 6⅓ million dollars should be added to costs for taxes which would have to be borne under private ownership.

The Committee's engineers used 3¼% for interest although the average rate on long-term United States Government bonds during the period of the Authority's construction was slightly under 3%. The extra ¼% is to allow for the possibility of a rise in interest rates before completion of the construction program.

Provision in the engineers' estimates for amortization of the power investment over a 50-year period at a 3¼% sinking-fund interest rate results in an annual amortization charge equal to .825% of the investment. In addition, renewals and replacements of property with a life of less than 50 years are provided for by a sinking-fund depreciation allowance of .95% of the total power investment. Thus the total amortization and depreciation allowance is 1.775%. The engineers' operation and maintenance allowance corresponds closely to the figure used by Dean Moreland. The Committee concludes from the figures used by its engineers that TVA will pay off the entire power investment in 50 years and that the physical plant will have been maintained during that period after which the interest charges will be relieved.

To determine the tax allowance the Committee's engineers analyzed total taxes paid by 15 privately owned utilities in the Tennessee Valley region and found them to range from 10.38% to 17.05% with an average of 13.84% of gross revenues. Then the taxes and payments in lieu of taxes made by the Authority's distributors were analyzed to find the remainder that should be charged against the Authority's revenues in order to place the Authority's power system as a whole (including distributors) on a tax basis, in terms of the ratio of taxes to gross revenues, equivalent to that of the private companies. It was found that a tax allowance of 12½% of the Authority's revenues plus the taxes and payments in lieu of taxes by the distributing agencies amounted to an average of 13.74% of the gross revenues from

(*Footnote 18 continued from page 217*)

Estimates are also presented for 3-dam and 7-dam systems on a 60% load factor and for the 10-dam system on a 50% load factor, both on the basis of general service and service limited by contract.

[19] Estimates for other systems or bases showed annual surplus revenues ranging from a low of $1,069,853 on a 3-dam normal system (60% load factor with special contracts) to a high of $3,710,146 for the 10-dam system on a 50% load factor, assuming general service. Surplus revenues for all systems are estimated to be approximately $1,000,000 less if special contracts are assumed.

sales to ultimate consumers. Therefore, the allowance of 12½% of the Authority's gross (wholesale) revenues was made even though the actual payments as taxes are less than this amount. An additional 1% was added for insurance, making a total allowance of 13½% of the Authority's revenues, equivalent to 1.17% of its investment.[20]

The estimated annual revenues of $24,330,000 for the 10-dam system are treated in detail by the Committee's engineers. First, the engineers made a careful study of the available market for power in the Tennessee Valley in relation to existing generating capacity to serve that market.[21] This analysis disclosed the following additional potential power requirements:[22]

| Territory | Peak Load in Kilowatts | Energy—Millions of Kilowatt Hours |
|---|---|---|
| TVA Service Area:* | | |
| Primary and Secondary Market† | 919,000 | 5,178 |
| 10-dam System Capability | 1,062,000§ | 6,030 |
| TVA Power Region:‡ | | |
| Primary and Secondary Market† | 1,960,000 | 10,689 |
| 10-dam System Capability | 1,062,000§ | 6,030 |

* TVA "Service Area" is substantially that reached by the present TVA transmission system. It includes all of Tennessee; first 50-mile zone in Georgia, Alabama and Mississippi; and second 50-mile zone in Mississippi.

† TVA "Power Region" includes all of Tennessee, Alabama, Georgia and Mississippi and minor sections of South Carolina and Florida. (This region by no means covers a 300-mile transmission radius from TVA.)

‡ The market for TVA power is defined as the load expectable after TVA rates are generally effective over and above the capabilities of existing economic power generating capacity.

§ This figure assumes that the 10-dam system capacity of 1,401,500 kws. will supply a dependable prime peak at 60% load factor of 810,000 kws., and a secondary peak of 370,000 kws., or a total of 1,180,000 kws., which are capable of a net delivery of 1,062,000 kws. at receiving substations.

According to the estimates, TVA's existing special contracts for primary power to high-load-factor industries—Aluminum Co., Electro-Metallurgical Co., Monsanto and Victor Chemical Cos., and Arkansas Power and Light Co.—could no longer be continued. Without taking into account such special contracts, the Authority's 10-dam system capability will just about meet the requirements for general-service-load growth in the TVA service area. In the TVA power region a deficiency in capacity will exist. The engineers conclude that there will be no problem in finding markets for the energy.

On the basis of the market analysis, revenue estimates were made for an independent hydro-operation. The estimates were made on two bases, one assuming continuance of special contract revenues and the other assuming no special-contract revenues, but the latter basis was used by the Committee in its report, which adopts $24,330,000 as the expected annual revenues for the 10-dam system.[23] These anticipated revenues cover the estimated expenses and provide an annual surplus of $3,782,767. The engineers estimate that, if TVA negotiates exchange power arrangements which will enable it to regrade the available secondary, dump, and surplus energy to a higher classification, the annual surplus earnings will be increased to $6,282,767.[24] Or if, instead of contracting with neighboring utilities, the Authority were to build or acquire the necessary steam plants of its own, sup-

[20] Items which might be classed as of the character of subsidies and for which no special allowance was made by the engineers in its calculations described above were believed to be inconsequential in their net effect.

[21] Engineering Report, Appendix B, pp. 75–95 and pp. 383–462.

[22] *Ibid.*, p. 94.

[23] The total estimated annual revenues of $24,330,000 for the 10-dam system are composed of: primary-power sales under the regular wholesale rate schedule at an average rate of 4½ mills per kilowatt-hour, $17,595,000; secondary-hydro energy at 2½ mills per kilowatt-hour, $5,300,000; dump hydro energy at 1 mill per kilowatt-hour, $1,435,000. If the revenues are limited by the special contracts, they will be $1,405,000 less per year and the annual surplus will be $960,700 less per year. (See Appendix B, p. 142.)

[24] See Engineering Report, Appendix B, p. 163.

plemented by steam plants owned by municipalities, the regrading of available power would enable it to increase its annual surplus earnings to $6,985,767. Therefore the Committee concludes with its engineering staff that the Authority's power program, upon attaining full development of the 10-dam system, will not only be self-supporting and amortize the power investment in 50 years, but, if the present wholesale-power rates are maintained, will also make a material contribution to the cost of navigation and flood control.

*Rates and Contracts*

The Committee's report and its engineers' report contain a detailed analysis of the existing rates and contracts of the Authority. These may be classified into three groups: (1) wholesale rates; (2) special contracts; and (3) retail rates. The Committee concludes—in answer to Dr. Morgan's charge, namely, that there was no basis for the rates when they were announced—that the Board members were not as familiar with the rate-making program as they might have been because of the division of functions among the members at that time. The first-announced rates appear to have been based upon estimates arrived at by conference with leading economists and engineers in the public utility field.[25]

(1) The wholesale rates are somewhat higher than the Bonneville rates, approved by the Federal Power Commission.[26] The average wholesale rate is approximately 5½ mills per kilowatt hour at the present time but it is estimated that, when the Authority is in full operation, this average rate under the present schedule will decline to 4.5 or 4.9 mills per kilowatt hour because of addition of a number of large cities which will obtain current chiefly in the lowest price bracket of the rate schedule. Evidence submitted to the Committee showed that large sales of firm power in 1937 and 1938 by private utility companies ranged from 2.9 to 5.39 mills per kilowatt hour. This indicates that the Authority's wholesale rates are not out of line, according to the Committee.[27]

(2) The engineering report presents a comprehensive analysis of the five principal special contracts of the Authority.[28] The report finds no favoritism to one customer over the others in the conditions of sale contained in the five special contracts and concludes that the advantages and disadvantages of each contract appear to be the normal result of bargaining with companies having different needs and different degrees of access to sources of power. The average revenue per kilowatt hour under these contracts is 3.15¢ for primary power and 2.30¢ for secondary power, the overall average being 2.74¢.[29] As noted above, upon attaining full operation, the contracts may have to be cancelled in order to meet general-service requirements of municipalities and cooperatives, which are given priority under the TVA Act and

[25] Appendix B, pp. 243–62 and Committee's Report, pp. 162–3.

[26] Appendix B, pp. 252–3, 262–6 and pp. 469–97 give a detailed analysis of TVA's wholesale contracts.

[27] See pp. 192–3 of the Committee's report; also Appendix B, pp. 269–70.

[28] Appendix B, pp. 266–9 and pp. 497–529.

The power sold under these five contracts is graded into three general classes: firm power, available 100% of the time; interruptible power, subject to interruption by the Authority for a specified number of days in each year; secondary power, available generally 75% of a specified period. A special class of power, available for minimum periods of 90 days upon 15 days' notice by the customer, provided the Authority does not have other requirements for it, is found in the Aluminum Co. contract. Dr. Morgan has criticized this contract as too favorable to the company, but Mr. Lilienthal stated the contract was necessary in order to obtain power for constructing Hiwassee dam. The Committee agrees with Mr. Lilienthal.

[29] Appendix B, p. 113.

which are more profitable customers than the industrial firms.

(3) The retail rates of municipalities and cooperatives are controlled by TVA through its wholesale contracts with these distributing agencies. A clause in the contract with Arkansas Power and Light Company may give TVA some control over that company's retail rates but the clause has not been invoked. The Authority also controls by contract the method of bookkeeping, disposition of revenues, and other practices of the distributing agencies. The form and structure of the retail rates are said to be comparable with those generally used by public utilities and the three classes of retail rates—residential, commercial, and industrial—are described as mutually consistent and as designed to encourage wider use of electricity. An analysis of the operating results of distributing agencies shows that municipalities are prospering under the Authority's low retail rates, but that the ability of cooperatives to cover their operating costs with the same rate schedule has not been conclusively established.[29a]

### *The Yardstick*[30]

The Committee received two apparently conflicting reports on the yardstick question and adopted the conclusion of the report which held that the *retail* electric rates of the Authority provide a legitimate and fair "yardstick."

The basis for this conclusion is the report of Mr. Leland Olds of the New York Power Authority.[31] Mr. Olds holds that there is a need for a yardstick, because electric utilities have expanded into interstate systems and have outgrown state regulatory commissions; the courts have assumed rate-making functions and caused the breakdown of regulation; a large percentage of power is sold to big customers on a competitive basis, leaving to small users the burden of carrying the "fair return on fair value" formula; and regulation is based upon an uneconomical and unprogressive "cost-price" theory. The Committee concludes that creation of a yardstick was the most practical available method of breaking the vicious circle of high rates and low consumption prevailing in the industry, with a minimum of public ownership.

The "yardstick," says the Committee, is not in the Authority's wholesale rates but in the low retail rates of the municipalities and cooperatives. If their operations are shown to be of a kind that may be substantially duplicated in other parts of the country, their rates may be considered a Nation-Wide Yardstick, or measure of results to be expected. The yardstick is thus to be found in the operating records and results of the distributing agencies which are charging the Authority's low retail rates, according to the Committee.

This yardstick has been attacked on three grounds: (1) a federal subsidy exists in the form of abnormally low wholesale rates; (2) the local agencies are enjoying a concealed subsidy in the form of promotional services, thus enabling them to increase sales without cost; (3) the internal bookkeeping of the local agencies does not show the costs that would be borne by a private system. The value of the yardstick depends, in the Committee's opinion, upon its ability to withstand attack on these points.

On the first point the Committee concludes that the Authority's wholesale rates are in line with those charged by private industry and therefore that no subsidy exists and that the costs and internal affairs of TVA are not related to the yardstick question. On the second point the Committee finds that the dis-

[29a] Committee's report, p. 184; Appendix B, pp. 238–43 and 290–5.

[30] See pp. 185–98 of the Committee's report.

[31] Appendix A, pp. 197–234.

tributing agencies are not receiving any more subsidy from the Authority's promotional activities than are the private companies and that in any event TVA's expenditures for sales promotion are relatively small. In answer to the third criticism the Committee reviews evidence submitted and expresses the belief that the accounting methods and the capital charges and other expenses of distributing agencies are fairly comparable with those of the private power industry. The Committee concludes, therefore, that the Authority's retail rates do provide a legitimate, honest yardstick of equitable rates of private industry. It further states, however, that the yardstick does not supply a simple and invariable rule but rather a body of experience indicating what may be expected in various types of communities when local conditions are properly taken into account.

The engineering report contains recommmendations concerning the yardstick which are not in harmony with the above conclusions.[32] The report points out that TVA's operating and cost conditions and marketing policies differ substantially from those of private companies and that the questions—yardstick where? yardstick when? and yardstick under what conditions?—would have to be satisfactorily answered and the differences adjusted before the Authority's electric rates would be considered an exact yardstick of private ownership. The engineering report recommends that use of the term "yardstick" in connection with TVA rates should be abandoned entirely and that the Committee should confine its investigation in this field to determining whether the Authority's costs have been reasonably incurred and whether the electric rates will yield revenues to cover those costs in such manner as to distribute them equitably as between taxpayers of the Nation and ratepayers of the Tennessee Valley. Thus, if full power costs are properly covered by revenues, then TVA's rates are a true yardstick, not of equitable private rates, but of accomplishments of public ownership under conditions prevailing in the Tennessee Valley.

[32] Appendix B, pp. 200–3.

*Relations with Private Companies*

The Committee's report avoids a detailed review of the past relationship of the Authority's power policy to the private companies because the situation which prevailed in the spring of 1938 was completely changed by new negotiations between TVA and the companies which were in progress at the time of the report. It was felt that emphasis in the report upon past relations might jeopardize new agreements being negotiated.

The Authority's power policy, which is summarized briefly in the Committee's report and at greater length in the engineering report,[33] has followed three broad courses: (1) division-of-territory agreements; (2) negotiations for power pooling; and (3) aggressive marketing operations. The first policy, which culminated in contracts for purchase of Commonwealth and Southern and Knoxville properties in 1934, broke down because of court attacks on the Authority's program, leading to the Ashwander decision of the United States Supreme Court. During the two years that elapsed before this decision, the division-of-territory contracts prevented the Authority from acquiring a market except by sales to existing municipal utilities or cooperatives or by restricted direct rural operations. After the Ashwander case and upon termination of

[33] Pp. 202–6 of the Committee's report and pp. 274–89 of Appendix B.

the division-of-territory agreements attempts were again made to cooperate with the private companies in negotiating a power-pooling agreement. Such an agreement was never consummated and negotiations were terminated when the private companies began to press the 18-Power Companies case in the courts. Up until the beginning of 1938 the Authority's market was also restricted by court injunctions restraining municipalities from constructing competing systems with the aid of PWA loans and grants.

When the cooperative policies for a division-of-territory agreement and power pooling failed, the Authority began aggressive marketing operations, although always expressing a willingness to purchase private utility properties at a fair price in order to avoid duplication. Such operations were restricted until early in 1938 when the United States Supreme Court rendered the decision in effect upholding the PWA loans and grants. Thereupon negotiations for purchase of existing private utility systems were renewed and are still in progress.

The Committee concludes that the 57 cases brought against the Authority up to June 1, 1938 have retarded the Authority's development, causing financial loss both to the Authority and its customers. In all cases which were appealed the decisions were favorable to the Authority. Losses from litigation are estimated by the Authority at some $13,500,000.[34]

### *Finances and Administration*[35]

The Committee's report reviews the Authority's financial and accounting practices, with special attention to its controversies with the Comptroller General, who is required to audit TVA's accounts. The Committee was impressed with the careful manner in which the Authority's budget system is handled but finds that the accounting methods and financial reports, prior to 1938, were extremely unsatisfactory. The difficulty before 1938 apparently was caused by the fact that the accounts were designed in too great detail for administrative purposes without regard to the exigencies of financial reporting. Early in 1938 the Authority's accounting methods were completely changed and the new system is approved by the Committee as sound accounting technique and as compliance with requirements of the Federal Power Commission.

A detailed analysis of the Authority's relations with the Comptroller General leads the Committee to the conclusion that, contrary to the claims of the General Accounting Office, Congress did not intend to subject TVA—a government corporation—to the general Budget and Accounting Act or to other similar general statutes which apply to executive departments, independent offices, or establishments of the Federal Government. Exceptions taken by the General Accounting Office to TVA's expenditures were based primarily upon untenable interpretations of the statutes, says the Committee, and the attitude and criticisms of that office were largely negative in character, leading to no constructive improvement in the Authority's accounting methods. The Committee concludes that the procedures of the General Accounting Office are unsuitable for the examination of the affairs of a government corporation and that either its personnel and methods should be revised to enable it to give appropriate auditing service to TVA or provision should be made for audit of TVA's records by an independent commercial auditing firm

[34] See pp. 65–6 of the Committee's report.

[35] See pp. 94–133 and 21–93 of the Committee's report.

not selected by the Authority or responsible to it. The Committee prefers the latter course and recommends an amendment to the TVA Act to authorize it.

The section of the report on administration covers matters of general administration, dissension in the Board, personnel and service departments of the Authority, and cooperation with other agencies. The personnel standards of the Authority are described in the Committee's report and in the special report of Dr. White of the University of Chicago as generally high and as reflecting careful and intelligent work by the personnel department.[36] The Authority has adopted an efficient and flexible merit system of its own and no evidence of political influence was found. The factor of personal and professional acquaintance in making appointments was important in the first years of TVA but has become progressively less significant. Dr. White recommends that the Civil Service Act be extended to the Authority, except possibly the highest administrative and technical positions. The Committee dissents from this recommendation and suggests instead that TVA adapt its personnel practices more and more closely to those of the Civil Service Commission and that, upon completion of the period of construction, consideration be given to bringing junior and routine positions under the Civil Service Act.

Apparently, in the original organization of the Board, a fundamental mistake was made, in that functions were divided among Board members. This faulty organization was an important contributing factor to the development of dissension and distrust among Board members and the division of functions provided a channel for carrying dissensions to all levels of the organization. After a detailed analysis of the charges and countercharges of the Board members, the Committee concludes that Dr. Morgan's charges of dishonesty were without foundation and that differences of opinion in the Board became exaggerated because of the Chairman's unfortunate propensity for attributing moral delinquency to anyone who differed with him.[37] The Committee notes that in 1936 and 1937 the Authority adopted a plan of reorganization whereby matters of general policy were vested in all of the Board members, who were relieved of administrative detail by the appointment of a general manager. The Committee recommends no change in the new organization and considers as desirable a three-man Board so organized.

[36] See pp. 53–61 of the Committee's report and pp. 65–86 of Appendix A.

[37] In reaching this conclusion the Committee reviews the Berry marble case, the conduct of the 18-Power Companies case, and other incidents cited by Dr. A. E. Morgan in his charges against the majority members of the Board. Apparently many of Dr. Morgan's charges were withdrawn during the course of the hearings. As for Mr. Lilienthal's charges against Dr. Morgan, the Committee finds that Dr. Morgan did interfere with the proper conduct of the Authority's work and litigation but that such interference can be attributed to his overwrought state of mind rather than to an intention to hamper TVA's program. The Committee concludes that Dr. H. A. Morgan and Mr. Lilienthal acted with forbearance and dignity with due consideration for proper administrative discretion, but that this cannot be said of Dr. A. E. Morgan.

# Urban Land Department

MORTON BODFISH, *Editor*

## The Borders Case

*BRADFORD Third Equitable Benefit Building Society* v. *Borders*, before Mr. Justice Bennett, decided Monday, February 13, 1939, in the English High Court of Justice, Chancery Division (71 *The Building Societies' Gazette* 198–214 (March, 1939)), is a case which will interest all lenders of money upon real estate.

Mrs. Elsy Borders, a married woman, bought 181, Kingsway, West Wickham, in the County of Kent, England, from Morrell (Builders) Limited, and borrowed 95% of the purchase price from Bradford Third Equitable Benefit Building Society, secured by the property and by a collateral pool provided by Morrell (Builders) Limited.

The loan was made in 1934 and provided for foreclosure in the event of default for a period of three months. The Building Society sued for possession under the mortgage, alleging a default. Mrs. Borders defended upon the grounds:

1. That she did not execute the mortgage sued upon;
2. That she was not in default;
3. That the Building Society exceeded its corporate powers and acted ultra vires in taking the collateral security from Morrell (Builders) Limited; and
4. She filed a counterclaim for damages on the ground that the Building Society had misrepresented the character and quality of the construction of the improvements upon the premises and was liable to her in damages for the fraud.

The judgment of the British Court is extended, discussing fully all of the issues, quoting extensively from the evidence, and deciding the issues. It appears that Mrs. Borders first contracted to buy the premises from Morrells upon certain representations made by Morrells, including representations made in a brochure published by Morrells. The brochure included representations that the property was inspected while under construction by the Building Society and tended to leave the prospective purchaser under the impression that the property was desirable property, because of the Building Society's inspection and supervision and because it was willing to lend 95% of the purchase price. After the contract of purchase Mrs. Borders was called upon to execute a mortgage to the Building Society and there was much negotiation, extending over many weeks. She admitted that she and her husband and another witness swore that the mortgage sued upon was not executed by her. The Court accepted this testimony as true and held against the Building Society on this issue, and that holding disposed of the case in the Trial Court in favor of Mrs. Borders.

Because an appeal was noted in the case the Trial Court, in accordance with the custom of the English courts, discussed and decided the other issues. Considerable dispute appears in the record as to the contractual payments and the credits on the account, but the Court decided that the defendant was in default.

The remaining issues in the case were those which attracted wide attention. The record quotes from the Building Societies Act, which authorizes building societies to accumulate funds and make loans to members upon the security of freehold, copyhold, and leasehold estates. The record also refers to and copies from an agreement between Morrells and the Building Society whereby Morrells, in order to induce the Building Society to loan up to 95% of the sale price of its properties, made certain deposits of cash with the Building Society upon the closing of this and other loans and pledged the deposit pool to the Building Society to guarantee that this and other loans in the pool would be paid down to a specified percentage of the original valuation. Upon the issue made by the defendant that the Building Society had no corporate power to enter into the transaction on account of the collateral pool, the Court said:

"... I conclude that the mortgage in question is not beyond the powers of the society. It is a mortgage of freehold estate. The security of the freehold estate is not merely nominal. As between the plaintiffs and the defendant the transaction is one of loan on the security of freehold property. It is not a case in which freehold land has been added to unauthorized security merely

to make it appear that the transaction was one of loan upon authorized security when the truth was otherwise. I express no opinion upon the validity of the pooling agreement between the plaintiffs and Morrells, or upon the validity of the collateral charges given by Morrells to the plaintiffs. That raises quite different considerations. And those considerations are not raised by the defendant's defence. . . ."

After quotation from and some discussion of the rules of the Building Society the Court said:

"So long as the transaction between the plaintiffs and the defendant is not outside the powers of the plaintiffs as defined by the Act of Parliament it is not, in my judgment, an illegal or invalid transaction or one which the plaintiffs cannot enforce . . . ."

After discussion of the evidence as to the representations made with respect to the quality of construction of the improvements upon the property, the Court said:

"I now turn to the counterclaim. The first claim the defendant makes against the plaintiffs is for damages for fraudulent misrepresentation. She alleges that representations were made to her, firstly to the effect that 187, Kingsway, was erected in accordance with the by-laws and other requirements of the local authority in whose area it was situate; secondly, that her house had been inspected by the plaintiffs' surveyor whilst it was in course of erection and again when it had been completed; thirdly, she says it was represented to her that the house she was buying was made of exceptionally good materials put together by excellent workmen. . . . It is not necessary to consider in any detail whether the defendant has proved that the representations to her were false. A great deal of time was occupied by the defendant and by the plaintiffs in leading evidence upon the question whether the defendant's house was a well-built house and whether the local by-laws had been complied with. I do not know why the plaintiffs occupied time over these questions. Their real case was that they were not responsible for any of the representations made to the defendant on the 9th February.

"Since the evidence on both sides was led and has been discussed, I will express my views on it. The defendant proved, in my judgment, that her house was damp because of its faulty construction. She proved that the roof of her house was badly constructed, and that the roof timbers were inadequate in size. She proved that the foundations of the house were insufficient, and that the builders had adopted deceptive means of concealing their insufficiency. She proved that the house was not exceptionally good either in workmanship or materials. On the contrary, she proved it to be badly built with bad materials. The case against the plaintiffs fails, because she had failed to prove that they were responsible for the representations made to her."

This case has been extensively commented upon in the British press and to some extent in the American press. The interest in the question in England will be better understood when it is pointed out that nearly ⅓ of the families in England are living today in new houses, built in the past 20 years; that the building societies have financed a very high percentage of these houses, possibly 80% or 90% of them; that this financing has been up to 80% to 95% of the sales price spread over about 23 years, bringing the weekly payment down under customary rental payments, and that in order to secure such high-percentage financing builders customarily deposited about 2% of the amount of each loan with the building society and pledged the pool of such deposits to guarantee the payment of all such loans down to about 75% or less of the original valuation. The popular interest, therefore, arose on account of the great volume of construction in recent years promoted on this basis. The people were interested in:

1. The question of whether building societies may legally take collateral security by the builders' pool arrangement, and
2. The question of whether the building societies are liable in damages for misrepresentations made in connection with the sale of the properties to the purchasers.

While the Building Society lost the Borders case, it won on the two major issues in the case which attracted such wide public attention. The press reports of the case in England and in America indicated that these two questions were of very great importance to the building societies, which are very large and strong financial institutions in England. There was discussion of organized effort on the part of mortgagors to void their mortgages because of the alleged ultra vires collateral agreements and to collect damages from the building societies because of alleged false representations with respect to "jerry building." Such press agitation took on somewhat the same form as some of the American press agitation with respect to Home Owners' Loan Corporation borrowers in demanding mortgage moratoriums, reduction of interest rates, and other concessions.

American savings and loan associations, the counterpart of the British building societies, and other American lenders will be interested in the Borders case because it illustrates how a simple piece of litigation may be made the subject of nation-wide

comment and, indeed, may be used to stir up borrowers even on the flimsiest basis. It will be well for American lenders, lending upon new construction particularly, to see to it:

1. That the lender makes no representation with respect to the quality of the construction;
2. That the builder does not lead his purchaser to believe that he may rely upon the lending institution for the quality of the construction; and
3. That in all cases of construction loans, the borrower signs a clear statement to the effect that the lender has made no representation with respect to the quality of construction and the character of the real estate.

If American lenders begin to take collateral security, it would be well to examine the situation to determine whether they have corporate power to make loans so secured.

Not the least occasion for the notoriety of the Borders case, evidently, was the fact that Elsy Borders herself must be a picturesque character, the wife of a taxi-cab operator, who acted as her own counsel in the case and apparently her own press agent. She proved to be a good one in both cases.

HORACE RUSSELL

*General Counsel, United States Building and Loan League*

# The Housing Status of Married Students at the University of Michigan

THE housing of the families of married students in a college community presents a number of special problems of considerable interest. In recent years, concomitant with a substantial growth in postgraduate enrollments, these problems have become more pressing. There has been a growing plaint from the married students about the cramped, ill-equipped, and insanitary quarters for which they are forced to pay exorbitant rents. There has been talk of "college slums," and horrified mention of undernourishment and disease ascribable to high rents and bad housing. University administrative authorities are becoming concerned about the problem and, in a few cases,[1] have done something about it.

The experiences of the author as a married student faced with the problem of obtaining housing in a college town has given rise to a more than vicarious sympathy with the victims of the housing situation. However, in the perspective of time and of a wider experience, some doubts have arisen as to whether housing conditions among married students are, in fact, so serious, and whether the economic burden of housing among the group is disproportionate. To lay this doubt, and because the University authorities were actively interested, the opportunity for an objective study of the housing status of married students at the University of Michigan was most welcome. With the cooperation of the Michigan Dames, a survey of the living conditions among this group was undertaken. The results have been published by the Bureau of Business Research of the School of Business Administration, University of Michigan.[2]

Before reporting on the results of the survey, it will be well to set forth certain pertinent social and economic characteristics of the married student group. Most of the group are graduate students, generally under 30 years of age, who are working toward advanced degrees. Their stay in the college town is from one to three years. In general, these young couples come from educated, middle-class families. Both their background and the college environment of their undergraduate days have contributed in creating a demand for a relatively high standard of living. Married students at Michigan finance their graduate education in devious ways, as shown in Table I.[3]

The way of the graduate student is hard. His work day knows no limits. He is under constant pressure to cram in the maximum of education before his savings are gone, or before his fellowship expires. As a result, his home life is distinctly abnormal, so that the functions of the dwelling space which he oc-

[1] At the University of Minnesota, a multi-family project for married sudents providing for 38 families has been initiated recently by the University.

[2] Ratcliff, Richard U., *The Housing Status of Married Students at the University of Michigan*, Bureau of Business Research, Report No. 2, School of Business Administration, University of Michigan, January, 1939. This study is based on a sample of 273 cases representing approximately 60% of the married students enrolled at the University.

[3] The financial capacity of this group will be discussed in connection with the rents which they pay.

cupies are quite different from the functions of "family" housing for the established householder. His family is typically composed of two persons. At Michigan, 2/3 of the student families were two-person families, and only 1/6 were families of more than three persons. These facts suggest that only small dwelling units are required, and that the provision of facilities for children is relatively unimportant. Only minimum cooking equipment is required, and the demands on the laundry facilities are light. The graduate student spends most of the day and the majority of his evenings in class, in the laboratory, in the library, or in his office on the campus. Some home-study facilities are necessary, and, in many cases, very important. Table I indicates that nearly 1/2 of the wives have part- or full-time employment. In these cases, the dwelling becomes primarily a place to eat and sleep, for the wife to catch up with her reading or her mending, and as a place for infrequent and inexpensive entertainment of small groups of friends.

TABLE I. SOLE OR PARTIAL SOURCES OF FUNDS

| Source | Per Cent of Group |
|---|---|
| Income from University | 44.4 |
| N.Y.A. | 5.6 |
| Other earnings of husband | 31.6 |
| Earnings of wife | 44.8 |
| Revenue from roomers | 10.4 |
| Gifts from friends or family | 21.2 |
| Other income | 25.2 |
| Depletion of savings | 34.4 |
| Current borrowings | 16.4 |

The way of life among married students and their economic status create a strong demand for dwellings within walking distance of the University campus. Customarily all meals are eaten at home for reasons of economy. Since the student spends most of his evenings at the library or office, he may make as many as three round trips daily between home and the campus. A further demand for convenience in location arises from the fact that a goodly proportion of working wives are employed by the University. It is true at Michigan that a surprising proportion of the married students (62%) own cars. However, this fact is partly explained by the relatively low cost of used cars in Michigan, and by the economies of motor transportation for family and belongings in traveling between the home town and Ann Arbor. Cars are not widely used in daily movements between home and work both because of the costs of operation, and because, in fact, very few suitable housing accommodations are to be found at greater than walking distance from the campus.

*Character of Housing*

Table II presents a description of the dwellings occupied by married students at the University of Michigan. The more significant housing characteristics will be discussed under appropriate headings.

*Structure.* The most characteristic type of structure in which dwelling units of married students are found is the converted one-family house, usually an old building located within a few blocks of the campus and remodeled into as many tiny apartment units as is physically possible. The other two most important structural types are apartment houses and single-family dwellings. Thus the foregoing three types account for 84.1% of all dwelling units. It is interesting to note one case of a 15-foot trailer.

*Size of Dwelling Unit.* In about 2/3 of the cases the dwelling units of married students are either two or three rooms in size. In the converted structures about 80% of the units are either two or three rooms and in apartment houses about 78% of the units are of this size, whereas in single-family houses 56% are six rooms and 80% are either six or seven rooms.

*Combinations of Room Functions.* An analysis of the use to which the rooms are put in the dwelling units of various sizes reveals that of two-room units about 80% consist of a living room used for sleeping and a kitchen used for eating. In the three-room units, in 62% of the cases, there is a living room, kitchen, and one bedroom, with the kitchen serving as dining space, whereas in about 10% of the cases the living room is used for eating. The four-room units, in about 3/4 of the cases, consist of a living room, dining room, kitchen, and one bedroom. The data indicate that as the number of rooms increases above four, the added rooms are bedrooms.

*Items Included in Rent.* There is an almost universal need among married students for furnished dwellings. This requirement is explained by the lack of owned furniture and equipment, since most of the young couples are too recently married to have accumu-

TABLE II. SUMMARY OF SIGNIFICANT HOUSING CHARACTERISTICS

| Item | Per Cent of Dwellings |
|---|---|
| *Type of Structure* | |
| Total | 100.0 |
| Converted structure | 50.0 |
| Apartment house | 21.6 |
| Business and dwelling | 2.2 |
| Single-family | 12.5 |
| Two-family | 7.8 |
| Three-family | 1.8 |
| Four-family | 3.3 |
| Other types | 0.8 |
| *Number of Rooms* | |
| Total | 100.0 |
| 1 | 3.7 |
| 2 | 26.9 |
| 3 | 38.5 |
| 4 | 10.7 |
| 5 | 8.4 |
| 6 | 8.1 |
| 7 | 2.9 |
| 8 or more | 0.8 |
| *Flush Toilets* | |
| Total | 100.0 |
| In dwelling unit | 91.2 |
| Not in dwelling unit | 8.8 |
| Total | 100.0 |
| Shared | 21.3 |
| Not shared | 78.7 |
| *Bathing Facilities* | |
| Total | 100.0 |
| In dwelling unit | 88.6 |
| Not in dwelling unit | 11.4 |
| Total | 100.0 |
| Shared | 20.9 |
| Not shared | 79.1 |
| *Combinations of Items Included in Rent* | |
| Total | 100.0 |
| Furniture only | 4.1 |
| Furniture, heat | 32.7 |
| Furniture, light | 0.4 |
| Furniture, heat, light | 10.8 |
| Furniture, heat, cooking fuel | 1.1 |
| Furniture, heat, cooking fuel, light | 22.3 |
| Heat only | 15.2 |
| Heat, light | 1.1 |
| Heat, light, cooking fuel | 2.2 |
| Light only | 0.4 |
| Nothing furnished | 9.7 |
| *Persons per Room* | |
| Total | 100.0 |
| 0.0–0.5 | 10.3 |
| 0.6–1.0 | 79.9 |
| 1.1–1.5 | 5.3 |
| 1.6–2.0 | 4.1 |
| More than 2.0 | 0.4 |

lated many possessions, or because the relatively short stay in the community makes it impracticable to ship in furnishings even when available. Seventy-one per cent of the student families in Ann Arbor live in furnished quarters. In 2/3 of the cases, furniture and heat are supplied. Other facilities such as light and cooking fuel are frequently included in the rent. Bare shelter is hired in only 10% of the dwellings.

*Adequacy of Space.* From the facts revealed by the survey, only a rough measure can be provided of the adequacy of the space in the dwelling units of married students. This measure is in terms of the number of persons per room. Although it is admittedly a crude standard, one person per room has been used in the field of housing as marking the upper limit of acceptable occupancy. In only 9.8% of the dwelling units studied is there more than one person per room. The most frequent cases are those of two persons occupying three rooms, and two persons occupying two rooms. It seems apparent from the evidence that there is virtually no overcrowding of dwelling units. On the other hand, the standard applied does not take into account the cramped quarters in which many of the families live and which would be reflected statistically only in terms of room dimensions or square feet of floor space per person. There can be little doubt but that the average size of the rooms comprising the dwelling units of married students is smaller than that of the rooms occupied by many other groups of our population.

*Rents.* The average rent paid by married students at Michigan is $43.21 per month. Seventy-three and one-tenth per cent of the cases fall between the limits of $27.50 and $52.50 (Table III). The two largest groups, totaling 34.5% of all cases, are the $37.50–$42.50 group with 16.9%, and the $42.50–$47.50 group with 17.7%. Only 5.5% of the families pay less than $27.50 per month rent, whereas about 1/5 (21.4%) pay more than $52.50.

Rents average higher in apartment houses, single-family houses, and three-flat structures than in converted structures and two-flats. For the same space, rents run about $10 to $15 a month higher in apartment houses than in converted structures. For instance, two-room units in converted structures average about $35 per month, whereas in apartments the average is about $45. The

TABLE III. RENTS

| Monthly Rent | Per Cent of Dwellings |
|---|---|
| Total | 100.0 |
| $ 0.00–$ 2.49 | — |
| $ 2.50–$ 7.49 | 0.4 |
| $ 7.50–$12.49 | — |
| $12.50–$17.49 | 0.4 |
| $17.50–$22.49 | 0.7 |
| $22.50–$27.49 | 3.9 |
| $27.50–$32.49 | 12.5 |
| $32.50–$37.49 | 14.0 |
| $37.50–$42.49 | 16.9 |
| $42.50–$47.49* | 17.7 |
| $47.50–$52.49 | 12.1 |
| $52.50–$57.49 | 9.2 |
| $57.50–$62.49 | 5.2 |
| $62.50–$67.49 | 3.3 |
| $67.50–$72.49 | 2.6 |
| $72.50–$77.49 | 0.7 |
| $100 and over | 0.4 |
| (Average rent—$43.21) | |

* Median group.

difference in three-room units is between $40 and $50, and between $45 and $60 in four-room units. In two-flat structures, the units rent for from $45 to $50 in most cases, and in single-family houses the most characteristic rent for six-room units is $50. It should be emphasized that these rents must be interpreted in light of the services which are included in rent.

*Financial Burden of Housing*

In the study of which this is a report, data on the financial status of married students were obtained in two forms—total funds available and cash income. The first figure corresponds with the family expenditures during the school year, whereas the latter figure excludes current borrowings and the depletion of savings, but includes all cash receipts of husband or wife, both earned and donated. To be strictly comparable with other analyses of the rent-income relationship, it would have been logical to use the cash-income figure. Because of the peculiarities of the group under consideration, it appeared to be more significant to study the burden of rent in terms of its relative importance in the family budget. Graduate students are not engaged in making a living. In many cases they have planned several years in advance for their graduate work, and have been accumulating savings in anticipation of it. Again, direct subsidies from their families or from the University in the form of fellowships are not earned income. In brief, they have little expectation, in contradistinction to the family man, of living on current earnings. Thus the true burden of housing would seem to be measurable in the most realistic sense as a proportion of expenditures.

Table IV presents the basic data reflecting the economic burden of housing and Chart I expresses the relationships in individual cases.

TABLE IV. RENT AS A PERCENTAGE OF TOTAL FUNDS AVAILABLE

| Rent as a Per Cent of Total Funds | Per Cent of Families |
|---|---|
| Total | 100.0 |
| 1– 5% | 0.4 |
| 6–10 | 0.8 |
| 11–15 | 6.1 |
| 16–20 | 13.1 |
| 21–25 | 23.3 |
| 26–30* | 24.2 |
| 31–35 | 19.6 |
| 36–40 | 6.9 |
| 41–45 | 2.4 |
| 46–50 | 2.4 |
| 51–55 | 0.4 |
| 56–60 | 0.4 |

* Median group.

About 1/2 of the student families expend between 20 and 30% of their available funds for rent, and 80% of the families devote from 16 to 35% to that purpose. The median rent-funds ratio is between 26 and 30%, whereas the ratio of average rent to average funds is 24.9% (Table V).

It has been frequently demonstrated that the rent-income ratio varies with economic

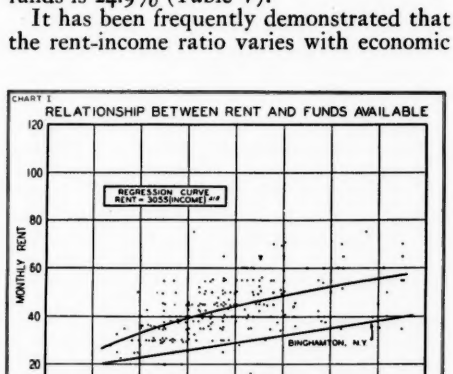

TABLE V. AVERAGE FUNDS AVAILABLE, AVERAGE RENT, AND AVERAGE RENT AS A PER CENT OF AVERAGE FUNDS AVAILABLE BY FUNDS-AVAILABLE GROUPS

| Amount of Funds Available | Average Amount of Funds Available | Average Rent per Month | Average Rent as a Per Cent of Average Funds Available |
|---|---|---|---|
| Total | $1,559.21 | $43.21 | 24.9 |
| $ 500-$ 599 | 532.50 | 27.75 | 46.9 |
| $ 600-$ 699 | 623.50 | 28.75 | 41.5 |
| $ 700-$ 799 | 767.67 | 31.67 | 37.1 |
| $ 800-$ 899 | 835.45 | 34.77 | 37.5 |
| $ 900-$ 999 | 943.38 | 35.12 | 33.5 |
| $1000-$1099 | 1,028.70 | 36.20 | 31.7 |
| $1100-$1199 | 1,144.00 | 36.30 | 28.6 |
| $1200-$1299 | 1,223.29 | 39.09 | 28.8 |
| $1300-$1399 | 1,336.77 | 42.04 | 28.3 |
| $1400-$1499 | 1,430.40 | 42.87 | 27.0 |
| $1500-$1599 | 1,518.16 | 44.98 | 26.7 |
| $1600-$1699 | 1,626.67 | 46.42 | 25.7 |
| $1700-$1799 | 1,731.93 | 45.71 | 23.8 |
| $1800-$1899 | 1,812.67 | 50.33 | 25.0 |
| $1900-$1999 | 1,923.89 | 46.83 | 21.9 |
| $2000-$2099 | 2,009.09 | 51.50 | 23.1 |
| $2100-$2199 | 2,105.00 | 42.00 | 18.0 |
| $2200-$2299 | 2,200.00 | 52.50 | 21.5 |
| $2300-$2399 | 2,326.88 | 45.88 | 17.7 |
| $2400-$2499 | 2,409.33 | 50.00 | 18.7 |
| $2500-$2599 | 2,500.50 | 61.62 | 22.2 |
| $2600-$2699 | — | — | — |
| $2700-$2799 | 2,700.00 | 75.00 | 25.0 |
| $2800-$2899 | 2,852.75 | 46.25 | 15.0 |
| $2900-$2999 | — | — | — |
| $3000-$3099 | 3,003.00 | 56.00 | 16.8 |
| $3100-$3199 | — | — | — |
| $3200-$3299 | 3,250.00 | 65.00 | 18.0 |
| $3300-$3399 | — | — | — |
| $3400-$3499 | 3,450.00 | 50.00 | 13.0 |
| $3500-$3599 | — | — | — |
| $3600-$3699 | 3,600.00 | 52.00 | 13.0 |
| $3700 and over | 4,500.00 | 68.00 | 13.6 |

status.[4] This fact holds true in this group of married students. In those cases where total funds available are from $500 to $900, the rent ratio is in the neighborhood of 40%. As the amount of available funds increases, this percentage decreases until it drops below 15% at the top of the scale. It is obvious that in the 14 cases where rent is more than 40% of the total funds available, the burden of housing must be particularly heavy. For instance, in the $500–$600 group the average income is $532.50 and the average rent $249.75, which leaves a balance of about $30 per month for all other expenses during the school year. In the $1,000–$1,100 class, this balance available for other items is $78, whereas in the $1,500–$1,600 class, which is the median group, after the rent is paid there will be about $123 per month for each family to be used for food, clothing, insurance, tuition, doctors and dentists, and all other items.

Comparisons of these ratios of rent to total funds available with the rent-income ratios encountered in other groups are of doubtful validity because of the unique economic and social characteristics of the student group. However, a few facts gleaned from other surveys may provide the basis for a crude comparative analysis.

In the *Urban Study of Consumer Purchases* conducted by the Bureau of Labor Statistics, the average expenditures and the percentages of income spent for housing, fuel, light, and refrigeration for families with incomes of $1,000 and over were reported as follows for these selected cities:

| City | Average Expenditure | Per Cent of Total Money Expenditures for Housing, Fuel, Light, and Refrigeration |
|---|---|---|
| Portland, Maine..... | $1,820 | 25.0 |
| Norfolk and Portsmouth, Virginia..... | 1,108 | 21.6 |
| Indianapolis, Indiana... | 1,848 | 19.1 |

A study of *Expenditure Patterns of Chicago Families by Income Groups, 1935–36*, by the Bureau of Labor Statistics, reveals the following rent-expenditure ratios for the families with incomes between $1,000 and $2,000:

| Family-Income Group | Per Cent of Total Money Expenditures for Housing, Fuel, Light, and Refrigeration |
|---|---|
| $1000–$1250 | 28.8 |
| $1250–$1500 | 27.1 |
| $1500–$1750 | 26.6 |
| $1750–$2000 | 25.8 |

An extensive set of comparative data is available from information assembled in the *Financial Survey of Urban Housing* and analyzed by J. Bion Philipson, of the Federal Housing Administration.[5] From this source,

[4] For example, see Philipson, J. Bion, "Consumption Standards and Housing," *Annals of the American Academy*, March, 1937, p. 120.

[5] Unpublished manuscript.

the facts are available by income groups. The following table presents the ratio of rent to income for the families in the $1,500–$1,999 income groups in selected cities:

| City | Rent as a Per Cent of Income |
|---|---|
| Binghamton, New York | 21.7 |
| Cleveland, Ohio | 21.6 |
| Des Moines, Iowa | 20.5 |
| Erie, Pennsylvania | 19.3 |
| Kenosha, Wisconsin | 17.4 |
| Lincoln, Nebraska | 19.7 |
| St. Paul, Minnesota | 22.4 |
| Trenton, New Jersey | 20.2 |
| (Michigan students | 24.9) |

The nature of the relationship between rent and funds available is deserving of a few final comments. Chart I shows the regression curve expressing this relationship. The standard error of estimate is $\pm 23\%$ and the correlation index is $+.615$ (when $Y = AX^b$). The curvilinear relationship implies that for each unit per cent change in funds there is a constant per cent change in rent.

From the *Financial Survey of Urban Housing*, calculations have been made by Philipson of the linear regressions for the relation between rent and income for a number of cities. By using Binghamton, New York, to illustrate a case where a straight line represents a particularly close fit to the data, the regression line has been plotted on the chart for purposes of comparison. The separation between the two curves has already been explained in part on the grounds of differences in services provided to the families from which the two samples were drawn. The divergence of the curves may arise from differences in the housing-demand schedules of the two groups, or in the housing-supply schedules in the two communities.

In comparing the financial burden of housing in the case of married students with other groups for which data are available, a number of differences must be recognized. The married students have small families, occupy small units of two or three rooms, but in most cases have the use of furniture; the other groups used for comparison are composed of larger families, have more space, but in general supply their own furniture. In the data from the *Financial Survey of Urban Housing*, fuel, light, and refrigeration are included in the cost of housing figures in only a portion of the cases, whereas these items are typically included in the rent of the married students. All things considered, it does not appear that the married student group is laboring under a disproportionate financial burden on account of housing.

RICHARD U. RATCLIFF

*Assistant Professor of Real Estate Management and Assistant Director of the Bureau of Business Research, University of Michigan*

# Land Resources Department

GEORGE S. WEHRWEIN, *Editor*

## Land Classification in New York

WRITING more than 2,000 years ago on the subject of buying a farm, Cato said, "Give heed to the appearance of the neighborhood—a flourishing country should show its prosperity." The New York State system of land classification is based upon a variation of this premise—namely, that varying degrees of agricultural prosperity are both evident and measurable.

In a state like New York, which has been settled for a considerable number of years, varying degrees of farm prosperity are reflected in the size and condition of the farm buildings, the apparent amount and quality of farm business being done, and the disappearance of farm houses. Using United States Geological Survey maps as base maps, trained enumerators drive over all the roads of the county being studied and, by inspection, classify the farms as *excellent*, *very good*, *good*, *fair*, or *poor*, on the basis of all visible indications of the long-time returns from farming. Rural residences are classified as *good* or *poor*. Houses which have disappeared or become uninhabitable since the maps were made are noted. The locations of schools, churches, and commercial establishments are indicated. The map so prepared is known as a property-classification map.

There is a decided tendency for farms with similar classifications to occur in groups. Areas where a large proportion of the houses have disappeared and where the remaining farms are practically all classified as *poor* are circled and called *land class I*.[1] Areas where some of the houses have disappeared and where those farms which remain are mostly *poor* are next circled and are designated as *land class II*. The condition of the farm capital in each of these areas indicates that farm incomes have been low for a period of years and that the farming which remains is not on a permanent basis.

The permanent agricultural land is divided into land classes III and higher. Land class III contains a preponderance of *fair* farms; class IV, of *good* farms; and classes V to VII, of *good*, *very good*, and *excellent* farms. Land class VII is developed muck land and is the highest class of land which has thus far been mapped in the State. In three counties, no land has been classified higher than land class IV. In one county, no land class I has been mapped; in another, neither land class I nor land class II.

The property classification to which reference has been made merely reflects the returns from farming the land for a period of years. A combination of factors determines how large these returns will be in any particular area. The type of soil, the topography, and the elevation are important physical factors. Location with respect to markets and changes in the demand for farm products are important economic factors. The present use of the land reflects the combined effect of these physical and economic factors.

A detailed soil map[2] and a detailed land-use map[3] are used in conjunction with the property-classification map. On the basis of these maps, the land-class lines are shifted, and in some cases areas are changed from one land class to another. Careful field checking is done, especially where the underlying factors which affect agricultural prosperity do not appear to coincide with what is indicated by the property classification. Extraordinary circumstances may have caused the appearance of individual farms to be either better or worse than would be expected from the underlying physical and

[1] Land which has been abandoned for farming, or upon which farming never has been attempted, is called land class I, because such land provides a definite base from which to start a classification. If the best land in a particular county were designated as land class I, there would then be no convenient designation for better land in some other county. For example, in the first county studied in New York State, only five land classes were mapped. If the best land in this county had been called land class I, instead of land class V, there would have been no convenient designation for the land class VI in the fourth county studied, or for land class VII mapped still later. Yet no difficulty was encountered in omitting land classes I and II in a county where there appeared to be no areas which were likely to be abandoned for farming.

[2] The soil maps which have been used are those which have been prepared by the Agronomy Department at Cornell in cooperation with the United States Bureau of Chemistry and Soils.

[3] The detailed land-use maps are made either on aerial photographs or on United States Geological Survey maps which have been ruled into 10-acre squares so that the use of land in each square can be indicated.

economic factors. In good farming areas, there are farms which appear relatively poor. Many of these farms are found to be owned by widows or old men who are not able to operate them to capacity. In poor farming areas, good-looking farms are sometimes found where considerable capital has recently been brought in from outside. In either case, the classification of these particular properties does not correctly reflect the economic productivity of the land, and this fact must be considered in drawing the land-class lines.

When the land-class lines are drawn on the basis of the appearance of the farms, each land class automatically includes land with a greater intensity of use than that in the next lower land class. The greater returns from the more intensive land uses are reflected in the visible prosperity of the farming. In land classes VI and VII, the land-use map plays a more important role than it does in the lower land classes, where its function is largely to delimit land-class boundaries more precisely than would otherwise be possible. In appraising the effect of various land uses on returns from farming, the results of cost accounts are of considerable value.

Land classification in New York is done on a county basis. The absolute intensity of land use in each land class of one county may be different from that in the corresponding land classes of another county where the type of farming is different. Land classes I and II, however, always include land which is not adapted for farming; and within a type-of-farming area, the intensity of land use becomes successively greater with each upward change in land class.

Visible indications of the degree of prosperity of a farming area reflect the ability of the land to pay for the various items which enter into production. The aggregate income of the area is divided among the various contributors to the total farm production. Part goes to the farmers for their labor; part goes to pay for capital; part for taxes; part for credit; and part for other items of production.

In areas where the aggregate income is low in relation to the type of farming, the reimbursement to the various contributors to production is low. The farmers receive little for their labor; farm capital is allowed to depreciate; taxes become delinquent; credit agencies suffer losses. Areas where the land does not produce sufficient income over a period of years to maintain the capital and to provide the farmers with the minimum standard of living that they are willing to accept will remain occupied only so long as the farm buildings remain usable. As some buildings burn and are not replaced, and as others gradually depreciate to a point where no one is willing to use them, the area gradually becomes abandoned.

Land which is adapted to permanent agriculture likewise varies in the aggregate income it produces per unit of area. As the aggregate income increases, the amount which goes to farm capital also increases. This is reflected in the factors which are considered in making the property-classification map.

A classification of land according to the visible indications of the aggregate income per unit of area over a period of years, if published as a usable map, serves several purposes. It helps to discourage persons from breaking their backs, hearts, and pocketbooks trying to farm land which will not provide them with a satisfactory standard of living. It also helps to curb the extension of public and private services like all-weather roads, rural electric distribution lines, farm credit, and cooperative farm fire insurance into areas where the income available to apportion to each is insufficient to pay for its cost.

Fully as important as the prevention of uneconomic uses of land classes I and II is the intensive development of areas where the income is sufficient to keep the farms permanently occupied. A good land-classification map encourages the extension of rural services in accordance with the ability of the various areas to pay for them. This is especially true where suggested programs for the extension of these services accompany the land-classification map. A suggested program for the construction of all-weather roads is shown on the large land-classification map of each county. A program for the extension of rural electric distribution lines is shown on a small-scale map in the report for each county, and large-scale maps are furnished to the electric companies serving the area. No programs are prepared for the extension of farm credit, fire insurance, or other rural services, or for the centralization of schools, but a special effort is made to furnish land-utilization information to the agencies concerned.

H. S. TYLER
*Assistant Land Economist,*
*Cornell University*

# Recent Changes in the Status of Laborers and Tenants on Arkansas Plantations

THE trend toward increased mechanization of cotton farming, together with the cotton-adjustment programs of recent years, has provided a basis for fundamental changes in the employment and status of farm workers and tenants on plantations in Arkansas. A desire to ascertain the nature of these fundamental changes and the factors associated with them led the Arkansas Agricultural Experiment Station and the United States Department of Agriculture to cooperate in a study of representative plantations in Jefferson, Miller and Phillips Counties in the spring of 1938. A second study is now in progress and will cover small areas in three upland counties, as well as three additional bottom-land, plantation counties. This article will be based largely on the results of the first study; more definite and comprehensive conclusions can be drawn after the completion of the study now under way.

The major part of the information was obtained through personal interviews with plantation operators, share croppers, and wage laborers. In addition, supplementary data on the plantations surveyed were obtained from Agricultural Adjustment Administration records in the three counties.

A total of 89 plantation operators and 423 share croppers and wage laborers were interviewed in the three counties. The plantation operators were selected at random and an attempt was made to secure a majority of the share-cropper and wage-laborer records from the plantations of the operators interviewed.

The plantations were located on the rich bottom lands of the Arkansas, Red, and Mississippi Rivers. Large-scale farming is characteristic of the present plantation system in these areas. The 89 plantations surveyed averaged slightly over 1,000 acreas in area, of which over 2/3, or 714 acres of land, was in cultivation. Cotton was planted on more than 50% of the cultivated land, averaging approximately 400 acres to the plantation.

Fifty-six of the 89 plantations maintained the same total land area from 1932 to 1937, while the average area of the remaining 33 has increased each year since 1932. Crop land on the plantations maintaining the same total land area increased during the six-year period as a result of land-clearing operations.

The number of resident families employed for farming operations averaged 23 per plantation in 1937. Seventeen of the families were share croppers; 3 were share renters, and 3 wage families.[1] Negro families predominated; only 3 of the average of 23 families per plantation were white. Seasonal, off-farm labor was used during peak employment at the time of cotton chopping and picking.

### *Changes in Plantation Labor Organization*

Preliminary results of the study in the three counties indicate several important changes in labor organization.

1. Displacement of families has occurred. The average number of resident families per 10,000 acres of crop land declined from 349 in 1932 to 327 in 1937, a decline of approximately 6%. The number of vacant tenant houses reported affords further evidence of displacement; of 2,186 tenant houses reported on the plantations in 1937, 121 (or 6%) were reported as vacant.

The acreage of cotton per 10,000 acres of crop land decreased by 33% from 1932 to 1934. From 1934 to 1937, however, cotton acreage increased each year, until in 1937 it was only 21% below the 1932 level. The number of tractors increased by 68% during the six-year period, while the number of mules and horses steadily declined.

The 6% decline in number of resident families was largely accounted for in two periods: from 1933 to 1934, when cotton

[1] The share renter on the plantation furnishes workstock, equipment, labor, and a major share of operating expenses and pays rent in shares of crop proceeds, usually ¼ of the cotton and ⅓ of the corn and other field crops. The share cropper contributes mainly labor and a small share of cash operating expenses; workstock and equipment, as well as land, are furnished by the plantation operator. The share cropper usually receives ½ of the cotton, corn, and other field crops. The resident wage family receives wages for work on the farm, as the term implies, and has no individual interest in a field crop of any kind

acreage declined for the second successive year; and from 1936 to 1937, when the number of tractors used on the plantations increased markedly.

A shift in the types of labor employed on the plantations also occurred. The number of share renters employed declined by 20% from 1932 to 1937. The major change, however, has resulted from a shift toward the production of wage cotton rather than share-cropper cotton.[2] Wage cotton represented 16% of the total cotton acres on the 89 plantations in 1934, increased to 28% in 1936, and declined slightly to 25% in 1937. The proportion of cropper cotton, on the other hand, declined from 69% of the total in 1934 to 58% in 1937. This shift toward wage cotton affected labor organization in two ways:

a. A change in the status of plantation workers from that of share cropper to that of wage labor, and
b. The assignment of nominal cotton acreages to a large group of share croppers who were then employed primarily as wage laborers.

Preliminary tabulations of data obtained in Chicot and Mississippi Counties, included in the second study now in progress, substantiate the conclusions drawn as to labor organization changes. These data indicate a 12% displacement of resident families from 1932 to 1938, a major part of the displacement occurring from 1937 to 1938 when a sharp reduction was made in cotton acreage. The shift from share cropper to wage cotton in the two counties is unmistakable. The number of tractors employed on the plantations in these two counties has increased at a more rapid rate than on the plantations in Jefferson, Miller and Phillips Counties.

### *Effect of the Use of Tractors*

Tractors were used to some extent on 56 of the 89 plantations in 1937. Thirty-six plantations reported tractor use during each of the years from 1932 to 1937; 20 plantations introduced tractors for the first time after 1932. Thirty-three plantations did not use tractors at any time during the period.

Only three of the 56 plantations with tractors reported their use prior to 1926; ½ of them first used tractors before 1932, and ⅓ first used them during the three-year period, 1935–7. The breaking of land appears to be the use to which tractors are first put after purchase; next in importance comes seed-bed preparation. Use of tractors for planting and cultivating, however, appears to be a practice of comparatively recent introduction. Because of recent increases in acreages of hay crops, tractors are now also used quite extensively for mowing.

Plantations using tractors during the entire period showed a 9% decline in number of resident families from 1932 to 1937, while the number of resident families employed on the other two plantation groups remained fairly stable with a tendency toward a slight increase on the plantation group utilizing no tractors. Moreover, plantations using tractors during each of the years, 1932 to 1937, made a greater shift toward the use of wage cotton and employed a larger proportion of share croppers with a nominal acreage of cotton than did the other two plantation groups.

Displacement of resident families has been held in check by the inability, thus far, of plantation operators to mechanize the operations of cotton chopping and picking. These hand operations constitute the peak labor requirements of cotton culture; the necessary labor must be supplied either by resident workers or by seasonal workers brought to the plantations. A majority of the plantation operators have no confidence in their ability to secure an adequate supply of off-farm labor during the chopping and picking seasons; hence, they have followed a policy of maintaining a resident labor supply sufficient to practically meet peak requirements. Successful development of the mechanical cotton picker will pave the way for further displacement of resident families.

### *Economic Status of Share Croppers and Wage Laborers*

A shift from a share-cropper to a wage-laborer status results in a diminution of the annual income of the plantation worker. This "economic displacement" of resident families is as important as the physical displacement of families mentioned in preceding paragraphs.

As a result of the collapse of the old dis-

[2] Wage cotton is produced by the plantation operators with the aid of wage laborers and croppers or tenants. There is no sharing of crop proceeds since the workers are paid wages for work performed. Share-cropper cotton is produced by share croppers who are paid wages in a share of crop proceeds (see footnote 1 above).

tinction between share cropper and wage laborer and of the appearance of so-called croppers with nominal acreages of cotton, the families were grouped in a four-fold classification in order to compare more adequately their economic status. Two major factors were taken into account in this classification: (1) the acres of cotton per worker, and (2) the relative proportion of the total net income of the family derived from wages received for day labor. Briefly, the characteristics of the four groups are as follows:

Group A. This group represents those families whose members were primarily wage laborers, i.e., they had no cotton crop in 1937 and received all their income from wage work, except for home-use products produced and perquisites received.

Group B. This group had only a nominal acreage of cotton in 1937; receipts from wage work accounted for 70% of the average net income per family.

Group C. Families in this group had an acreage of cotton that approached a full-sized share crop but supplemented their cotton income by wage work. Receipts from wage work accounted for slightly over 35% of the average net income per family.

Group D. Families in this group had a full crop of cotton, and actually spent more, on the average, for labor hired to work on their own crops than they received from wages for day work performed by family members.

Groups A and B are really two classes of wage laborers, while Groups C and D are divisions of the share-cropper group. When interviewed, all families in Group A classified themselves as wage laborers, and approximately ⅔ of the Group B families reported a wage-laborer status. As would be expected, practically all families in Groups C and D regarded themselves as share croppers.

In 1937, the average net income per family varied from a high of $498 for Group D to a low of $366 for Group A. Families in Groups B and C averaged net incomes of $463 and $469, respectively. The fact that cotton farming fails to provide employment for the workers throughout the year is fundamental in explaining the low annual income of all four groups. Both share-cropper and wage-laborer family members average less than six full months' work per worker per year.

The value of products produced for home use and of perquisites received represented ¼ of the average net income of the families in all four groups, ranging from $101 to $184 in Groups A and D, respectively.

Of interest is the direct effect of mechanization on income of the workers. Approximately 1/5 of the Group A families reported receiving wages for tractor driving performed by family members. Wage rates for tractor driving are, in most cases, at least 1/3 higher than those for other major tasks. Another effect of mechanization on the economic status of the families appears in the fact that slightly over 1/4 of the families having a cotton crop reported charges made by the plantation operator for tractor work performed during the season on the share crop of the workers. In most cases this tractor work consisted of breaking and preparing land; in others, planting and cultivation of the crops were included. The charges per family for families reporting such items averaged from $12 to $15.

Both share croppers and wage laborers recognize that the economic status of the share cropper is higher than that of the wage laborer. When interviewed, a majority of the families of all four groups reported a preference for a share-cropper status.

### *Conclusion*

An increase in the use of tractors, together with cotton-adjustment programs of recent years, has brought about important changes in the labor organization of Arkansas plantations. A 6% displacement of resident families occurred from 1932 to 1937. Evidence indicates that even more displacement took place from 1937 to 1938. A change in the types of labor employed on the plantations was brought about by a shift from share-cropper cotton to wage cotton during the period covered by the study. This change of workers from a share-cropper to a wage-laborer status results in a diminution of the annual income of the worker, an "economic displacement" equally as important as the physical displacement of families previously noted.

GLEN T. BARTON
*Agricultural Adjustment Administration*
J. G. MCNEELY
*Arkansas Agricultural Experiment Station*

# Public Utilities Department

E. W. Morehouse, *Editor*

## Two Recent Utility Cases Involving Refunds

SINCE the February issue of the *Journal*, where a survey of refunds made by public utility companies was given,[1] two additional cases of interest have received attention by the courts. The first of these found the famous Illinois Bell Telephone Company refund case once more before the federal courts. Begun in 1921 in an endeavor to reduce telephone rates in the city of Chicago, it dragged through the commission and courts until 1934, when the United States Supreme Court finally decided in favor of subscribers and ordered a refund of all excessive amounts ($18,798,980) collected from 1923 to 1934. When the refund was terminated in 1937, $1,688,295 remained unclaimed and unrefunded; this the company claimed. The state of Illinois also presented a petition asking that the balance be turned over to the state as trustee for subscribers who had not filed claims.[2] On December 23, 1937 the federal district court, which had jurisdiction over the refund, denied the state's claim because the Illinois law made no such provision, and for other reasons peculiar to the case. The state then filed a supplemental petition claiming that the remaining funds were ownerless and therefore, under the common law, the property of the state of Illinois in its sovereign right as owner of such property. In January, 1938 the supplemental petition was denied and in February the company was awarded the funds.

The state of Illinois then appealed the case to the federal circuit court of appeals on the same common law principle of *bona vacantia*. On February 22, 1939 the court handed down the first ruling on this principle as applied to such a situation, denying the appeal of the state[3] on the grounds that the subscribers were not the owners of the funds even before the period of limitation for claims expired (June, 1937) and that subscribers had only a debtor-creditor relation with the company for excessive amounts paid. After the period of limitation expired the company was no longer held to have an obligation and there was therefore nothing "ownerless" for the state to take. The court further urged that the common law upon which the state's claim was made was of "uncertain and indefinite" nature.

It is the view of the writer that the relationship of a company to its excessively charged customers and to funds being collected and held in trust during a litigation should be clarified. The opinion of the court that a mere debtor-creditor relationship exists between the company and subscribers who have been found to have paid excessive rates appears to have no *logical* basis. It is unfortunate that the court sidestepped an analysis of that relationship in the case in question. The opinion of the United States Supreme Court on this matter, should the point be appealed, will be of interest to commissions and consumers generally. If the Supreme Court should sustain the lower court, every state legislature not yet having done so should amend its utility act by making provision for disposal of unclaimed refunds. Even if the lower court is reversed, such enactment is desirable so that reliance need not be placed upon litigation and an indefinite common-law principle to prevent a company from retaining funds to which it has very doubtful claim.

The state of Illinois is given 90 days from February 22, 1939 to appeal to the Supreme Court of the United States and there is a possibility that this will be done. If appealed, it will be the sixth time that some aspect of this seemingly unending controversy will have received attention from that body in the last 18 years. When that amount of litigation is needed in order to secure reasonable charges for consumers, the concept of regulation to obtain "the best possible service at the lowest possible cost" can hardly be termed successful.

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[1] Floyd R. Simpson, "Public Utility Refunds: A Study of Regulatory Ineffectiveness," 15 *Journal of Land & Public Utility Economics* 12 (February, 1939).

[2] Claims were also filed with the court by the city of Chicago, Cook County, and attorneys for individual subscribers. (114 *Telephony* 30 (January 8, 1938).)

[3] *Ill. Bell. Tel. Co. v. Slattery et al*, U.S. Circuit Court of Appeals, No. 6671.

*The Tri-State Telephone and Telegraph Case*

The second recent case of interest relative to the awarding of refunds to subscribers was handed down by the Minnesota Supreme Court as the result of a 10-year controversy between the Minnesota Railroad and Warehouse Commission and the Tri-State Telephone and Telegraph Company. Proceedings began August 15, 1929 upon an order of the commission to the company to show cause why all its rates and charges should not be reduced. The company objected and the commission then undertook a survey of the company's property in the St. Paul area. This was followed by an investigation of all schedules and exchange rates. Hearings were concluded on December 19, 1934.

In the meantime (August, 1932), upon petition of the city of St. Paul, the commission made a temporary rate order reducing service rates in the area from $.50 to $1.00 per month on the several classes of service. The authority to make a temporary rate order was held to rest with the commission by an interpretation by the attorney-general and not by specific legislative provision in the utility act.[4] The company immediately secured a temporary injunction in the federal district court (September, 1932) restraining enforcement of the order and requiring bond to be posted. On January 30, 1935 the court made the injunction permanent and, inasmuch as the attorney-general did not appeal the case further, the bond was dissolved and an estimated $2,000,000 of potential refunds to consumers, should the commission ultimately have been upheld, were lost to St. Paul subscribers.

After completion of the investigations and hearings mentioned above, the commission entered its final order and findings on March 31, 1936. The order reduced rates for service about 25% in the St. Paul area to become effective as of May 31, 1936.[5] An appeal was made by the company to the Ramsey County District Court and bond was posted. The court's decision in favor of the commission was made May 21, 1937, and the company then appealed to the Minnesota Supreme Court. The latter body rendered its opinion sustaining the lower court on February 24, 1939.[6] During the litigation since 1936 an estimated $1,600,000 has been collected from subscribers in excess of commission-ordered rates and will soon be refunded to subscribers if the case is not appealed to the United States Supreme Court. In the meantime, refundable amounts are still being collected at the rate of approximately $50,000 a month.

The rate of return upheld by the court was 6%, whereas the commission had pointed out that the actual rate of return had been 19.89% in 1931 and 16.17% in 1933 on fair values of $8,750,000 and $8,500,000, respectively.

The following comments of the court on depreciation are of special interest. The court, in line with the Lindheimer decision,[7] stated that

> "... there must be some relation established or equilibrium struck finally between additions to and deductions from the reserve.... There must be some relation between the amount in the depreciation reserve and the amount of actual depreciation which has accrued ... the percentage [of accrued depreciation] confessed by the company is entirely out of proportion to the depreciation reserve which has been accumulated from past operations."

The company had been annually charging approximately 5% of its current book value and was reimbursed for about 47% of the loss to be anticipated upon retirement of its depreciable property. Yet the company contended the property for rate-making purposes to be about 90% of its original or reproduction cost. The court upheld the commission's future annuity rate of 2.73% as being adequate.

The depreciation aspects of this case are especially interesting because the Tri-State's depreciation reserve was even more out of line with claimed observed depreciation than in the Illinois Bell case where the United States Supreme Court so strongly emphasized the unwarranted discrepancy. In the Illinois case the reserve was equal to $48 million and the observed depreciation was but $16 million. In the Tri-State case the reserve was $5.7 million, whereas observed depreciation was claimed as being approximately $1.3 million. The attention which commissions and courts are now giving to excessive depreciation charges is most desirable.

[4] Biennial Report of the Supervisor of Telephones of the Railroad & Warehouse Commission of the State of Minnesota, 1931–32, pp. 100–9.

[5] *In re Tri-State Tel. & Tel. Co.*, M-1956 (1936).

[6] 284 N.W. 294.

[7] 292 U.S. 151 (1934).

Another aspect of the case relates to the allocation of costs and revenues from toll service originating in an exchange area. The commission assumed that local monthly exchange rates are so constructed as to cover only costs of local equipment and facilities. It is assumed that no access to the toll board is provided for in those charges. If toll calls are made, the toll charge should therefore include the cost of using local facilities for toll purposes. Although it had the discretionary right to adopt this formula (known as the station-to-station formula), the court sustained the claim of the commission that a portion of all toll charges should be included as an additional part of local exchange revenues. The commission adopted 25% of such toll charges as being adequate to cover the costs of using local facilities and equipment from the subscribers' premises to the toll board, but the court allowed only 12½%.

The difficulty of stating a definite formula for making valuations and selecting a rate of return, which has troubled the courts since *Smyth* v. *Ames*, was evidenced again in this case. The court said:

"... it follows that if the findings are sufficiently specific to permit a court sitting in review to determine whether or not the Commission was influenced only by matters properly within its purview in reaching the result, then due process is satisfied.... the Commission is not obligated to display the weight given by it to any part of the evidence or to disclose the mental operations by which it reached its results."

On May 2, 1939, after the Tri-State Telephone and Telegraph Company had asked the Minnesota Supreme Court for a rehearing, the case was suddenly terminated by an agreement between the commission and the Tri-State and Northwestern Bell Telephone Companies. In place of the 25% reduction ordered in the St. Paul area, the agreement provided for a reduction of about 12% in both the St. Paul and Minneapolis areas, to be effective on June 1, 1939. Inasmuch as operating costs and property valuations have risen since the order of 1936 was made, the smaller reduction was agreed upon in lieu of continued litigation in St. Paul and the beginning of rate proceedings by the commission in the Minneapolis area. St. Paul subscribers will receive a refund in cash or future service totaling an estimated $1,700,000. The refund is scheduled to begin about July 1, 1939.

FLOYD R. SIMPSON
*Instructor of Economics,*
*University of Minnesota*

## Public Utility Financing in the First Quarter of 1939

PUBLIC utility security offerings totaled approximately $150 millions during the first quarter of 1939. This represents a sharp decline from the $506 millions offered in the last quarter of 1938 and is approximately equal to the $156 millions offered in the first quarter of 1938.

Of the $150 millions offered in the current quarter, $105 millions are represented by issues of the North American Company, $70 millions in debentures and about $35 millions in preferred stock.

This financing accomplished by the North American Company is worthy of comment because it represents the first large-scale financing undertaken by a holding company in the gas and electric field since 1936. It is significant that holding companies, as a group, have not taken part in the large-scale refinancing operations which have taken place since the current low interest rates became a factor. It will be interesting to note whether other holding companies find it possible to follow the lead of the North American Company in months to come, in view of the current attitude of investors toward equity financing and holding companies, and in view of the uncertainties connected with Section 11 of the Holding Company Act. It is possible that the majority of operating companies in a position to make a saving at the present low interest rates have already done so. In case this is a fact, holding-company security offerings may make up a larger percentage of the total during the next few years than they have at any time since 1932.

Long-term debt issues totaled $113.5 millions, preferred stock issues $36.3, and common stock $300,000. According to the *Commercial and Financial Chronicle*, only 5% of the total was offered for the purpose of obtaining new capital. This is an even smaller percentage than that reported in 1938.

Nearly 2/3 of the issues were placed privately but, since many of these were small, public offerings comprised 88% of the total

dollar volume. The unusually large number of small issues is traceable to the fact that 15 small subsidiaries of the Northeastern Water and Electric Company sold bond issues to an insurance company in order to pay off indebtedness to the holding company. The funds obtained from these issues are to be used eventually to meet maturing obligations of the holding company.

*Long-Term Debt Financing.* The details of this class of financing are summarized below:

| Item | Number of Issues | Amount |
|---|---|---|
| Public offerings | 7 | $ 96,000,000 |
| Private sales | 20 | 17,507,000 |
| Total | 27 | $113,507,000 |

The issues offered publicly are analyzed in Table I. The 20 issues placed privately are listed below:

| | |
|---|---|
| $7,500,000 | South Pittsburgh Water Co. 1st Mtge. 3¾s, March 1, 1964, refunding |
| 2,000,000 | Citizens Water Co. of Washington, Pa. 1st Mtge. 4s series A, February 1, 1964 |
| 500,000 | Latrobe Water Co. (Pa.) 1st 4s, February 1, 1964* |
| 425,000 | Riverton Consolidated Water Co. 1st 4s, February 1, 1964* |
| 316,000 | Penobscot County Water Co. 1st 4s, February 1, 1964* |
| 300,000 | North Little Rock Water Co. 15-year, 4¼%, 1953, refunding |
| 275,000 | West Penn Water Co. 1st 4¼s, February 1, 1964* |
| 260,000 | Hampton Water Works Co. 1st 4½s, February 1, 1964* |
| 250,000 | Mystic Valley Water Co. 1st 4s, February 1, 1964* |
| 240,000 | Allentown-Bethlehem Gas Co. 1st Mtge., 3¾s, due 1965 |
| 160,000 | Maryland Water Works Co. 1st 4¼s, February 1, 1964* |
| 130,000 | City Water Co. 1st 4s, February 1, 1964* |
| 116,000 | Skowhegan Water Co. 1st 4s, February 1, 1964* |
| 80,000 | Presque Isle Water Co. 1st 4¼s, February 1, 1964* |
| 70,000 | West Virginia Water Service Co., 1st Mtge. 4s, 1961, working capital |
| 55,000 | Gettysburg Water Co. 1st 4s, February 1, 1964* |
| 50,000 | Louisa Water Co. 1st 4¼s, February 1, 1964* |
| 50,000 | Mars Hill & Blaine Water Co. 1st 4½s, February 1, 1964* |
| 40,000 | Guilford Water Co. 1st 4½s, February 1, 1964* |
| 40,000 | Norway Water Co. 1st 4s, February 1, 1964* |

* Issues of subsidiaries of Northeastern Water and Electric Corporation.

It will be noted that 19 of the 20 issues sold privately are issues of water companies. This does not appear to be particularly significant because 15 of the 19 water-company bonds sold are issues of companies of the same holding-company group.

Of the issues offered publicly (listed in Table I), Northern States Power (Wisconsin) was able to obtain funds at the lowest net cost. Underwriters' commissions during the first quarter of 1939 appear to be about average in amount, whereas estimated incidental expenses are higher than those reported during 1938.

*Other Financing.* First quarter offerings of preferred and common stock are listed be-

TABLE I. SUMMARY AND ANALYSIS OF LONG-TERM DEBT ISSUES OFFERED PUBLICLY, FIRST QUARTER, 1939*

| Company and Issue (A) | Coupon Rate (B) | Principal Amount (C) | Maturity Date (D) | Month of Offering (E) | Offering Price (F) | Offering Yield (G) | Underwriters' Commissions (H) | Proceeds to Company (I) | Estimated Incidental Expenses (J) | Net Proceeds (K) | Cost to Company (L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | | | | % | % | % | % | % | % | % |
| North American Co. | | | | | | | | | | | |
| Debentures | 4 | $25,000,000 | 2-1-59 | February | 101.25 | 3.91 | 2.25 | 99.00 | .77† | 98.23 | 4.13 |
| Debentures | 3-3/4 | 25,000,000 | 2-1-54 | February | 101.00 | 3.66 | 2.00 | 99.00 | .77† | 98.23 | 3.91 |
| Debentures | 3-1/2 | 20,000,000 | 2-1-49 | February | 101.75 | 3.29 | 1.75 | 100.00 | .77† | 99.23 | 3.59 |
| Northern States Power Co. (Wis.) | | | | | | | | | | | |
| First Mortgage | 3-1/2 | 17,500,000 | 3-1-64 | March | 106.00 | 3.15 | 2.00 | 104.00 | 1.00 | 103.00 | 3.32 |
| Community Public Service Co. | | | | | | | | | | | |
| First Mortgage | 4 | 6,600,000 | 3-1-64 | March | 100.00 | 4.00 | 2.75 | 97.25 | .61 | 96.64 | 4.22 |
| Otter Tail Power Co. | | | | | | | | | | | |
| First Mortgage | 3-1/2 | 1,200,000 | 3-1-69 | March | 98.00 | 3.61 | 4.00 | 94.00 | 1.48 | 92.52 | 3.93 |
| Weighted Averages or Totals | 3.69 | $95,300,000 | — | — | 102.03 | 3.58 | 2.09 | 99.94 | .81 | 99.13 | 3.81 |

* Exclusive of $700,000 Mutual Telephone Co. First Refunding and Improvement 4% Bonds offered at 101.00% in January, 1939.
† Expenses prorated.

low. There were no offerings of short-term bonds.

1. Pennsylvania Telephone Company—24,000 shares $2.50 preferred stock, no par. Price $53.25 per share and dividends. Yield 4.69%.
2. North American Company—$34,829,000, 5¾% preferred, par $50. Price $52 and dividends. Yield 5.53%.
3. Greenwich Gas Company—10,000 shares $1.25 participating preferred, no par. Price $25 and dividends. Yield 5.00%.
4. Honolulu Gas Company, Limited—15,000 shares of common stock, par $20. Price $20.

The Pennsylvania Telephone Company issue yielded 4.69%, one of the lowest yields on an offering of public utility preferred stock since the first quarter of 1937 when the Consumers Power Company offered 547,788 shares of $4.50 no-par preferred stock at $100.50 to yield 4.48%. The preferred stock issue of the North American Company is larger than any such issue since the Consumers Power Company offering described above.

R. G. DUDLEY
W. H. EVANS
*Statisticians,*
*Public Service Commission of Wisconsin*

# The Illinois Commerce Commission and the Illinois Supreme Court*

IT HAS become mere tautology to repeat that an administrative agency, to perform its job efficiently, must be respected by the courts. The cause that gives rise to an agency is the ever increasing complexity of governmental-industrial problems which require the talents of the technician rather than the judge. If judges are hesitant to adopt the findings made by a commission, and instead substitute their own inclinations, the administrative agency becomes not symbolic of legal progress but "shambolic."

The important case of *Peoples Gas Light and Coke Company* v. *Illinois Commerce Commission*[1] recently decided by the Illinois Supreme Court, if indicative of a tendency, gives credence to a belief that the latter will sanction the administrative broth if they are satisfied with the talent of the cook. The court, without going into the merits of the case, set aside an injunction issued by the circuit court against enforcement of the commission's order, reasoning that the company should have followed the procedure laid down by the statute, which provided a mode for judicial review of the order. The commission's order in brief refused a company demand for an increase in rates which, if approved, would result in an annual increase in the company's gross revenue estimated at approximately $3,000,000. Although the court's holding rested upon the narrow ground that the company must first exhaust its administrative remedy before it could proceed in court, an examination beneath the veneer of legal phraseology might indicate that the court was swayed by merits of the commission's finding.

The Public Utilities Act sets out a procedure which purports to grant a judicial review to a utility affected by an order made by a commission. After an order is made, the company must apply for a rehearing within a period of 30 days. The commission then grants or denies such application within a period of 20 days. Should the application for the rehearing be denied, the company within 30 days can appeal to the circuit or superior court for the purpose of having the reasonableness or lawfulness of the order determined. The statute further provides that, if no appeal is taken, the parties affected by the order shall be deemed to have waived the right to have the merits of the controversy reviewed by a court.

The company in the instant case, instead of petitioning for a rehearing, went into equity and obtained an injunction restraining enforcement of the commission's order which refused the increase in rates. The rule is well established that a suitor must exhaust his administrative remedies before proceeding to a court of equity. This rule is analogous to the rule that equity will not afford relief where the remedy at law is adequate. The issue in the instant case involves the jurisdiction of the equity court. This issue cannot be determined, as the court seems to think it can, upon the validity of Section 68

* A rehearing was granted the company by the supreme court after the completion of this article, so what has been said herein may prove to be wishful thinking.

[1] Decided February 22, 1939; rehearing granted April 5, 1939.

which denies the complainant the right to have the commission's order reviewed by a court when the statutory procedure is not followed. The jurisdiction of equity here must rest as it does in all other cases upon the question of whether an adequate remedy at law exists. The commission's argument that the remedy at law is adequate rests upon the effectiveness of the remedy provided in the statute. It was contended that, since this remedy was not pursued, the company should be precluded from injunctive relief.

As a practical matter, however, does the statute afford adequate relief? Section 71 of the Public Utilities Act makes it quite definite that there could be no stay of the commission's order denying the proposed rate increase until the statutory appeals to the circuit and supreme courts had resulted in a final decision. In other words, the rates as determined by the commission are to remain in effect until final decision by the supreme court. Thus, it is quite apparent that, if the supreme court had been disposed to set aside the commission's order, the company could in no way recover the sum they would have lost—approximately $2,000,000, they contend—in the interim. On the other hand, if the company violated the commission's order they would have subjected themselves to severe pecuniary penalties.

Theoretically, the company did not exhaust its administrative remedy in failing to petition the commission for a rehearing. However, as a practical matter, this right reserved to a company aggrieved by a commission order would not grant the company the relief it sought in equity—i.e., against the *daily interim confiscation*. While waiting for the commission to act upon the petition, the company would still be forced to charge the rates they formerly charged (which they claimed to be confiscatory). Furthermore, there was no probability that the petition would be granted in view of the fact that the recent request for the rate increase was the second one made by the company and denied by the commission. Even if the petition were granted, the company would still be forced to charge what they contend are confiscatory rates during the time the commission heard the company's case. Though there is some controversy as to whether the company actually obtained speedier relief than they would have received if they had pursued the statutory remedy,[2] it seems clear that the remedy pursued by the company was the only kind of remedy which could grant them the relief they sought—namely, against the *daily interim confiscation* which they could never recoup.

Though an assertion as to what the court would have done had the question of the reasonableness of the rate as determined by the commission come up for review via the proper channel is hazardous speculation, a belief that the commission order would have been upheld is well warranted in light of the uncompelling ground upon which the instant case was decided. If the court's respect for the commission is as strong as the writer interprets it to be, there need be no fear that the public will be mulcted by a rapacious utility.

DAVID S. WALD
*Member, Editorial Board,*
*Illinois Law Review*

[2] The company contends that actually 11 months were saved as a result of the procedure they adopted. Their contention is based upon the following speculation: commission's final order issued May 21, 1937; time allotted for company appeal—30 days; time allotted for commission to pass on application for rehearing—20 days; case would be appealed to court October 1, 1937; decision rendered January 15, 1938; appealed to supreme court April, 1938; would be decided December, 1938. Injunction was granted February 4, 1938.

The commission contends (see Reply Brief of commission, p. 5) that, if the statutory procedure were followed, the company actually would have obtained speedier relief:

| Procedural Steps | Elapsed Time | Date |
|---|---|---|
| Commission order | | May 21, 1937 |
| Petition for rehearing | | May 27, 1937 |
| Denial of rehearing | 20 days maximum | June 16, 1937 |
| Appeal perfected | 1 day (minimum) | June 17, 1937 |
| Record filed | 20 days (maximum) | July 7, 1937 |
| Hearing begin | Relying on §70 of Act which provided for priority and §68 which specifically states: "... it shall be its [the court's] duty *in term time or in vacation* to hear and determine such appeal with convenient speed" (Italics supplied). | July 14, 1937 |
| Decision by court | 4 months (maximum assumed by company) | Nov. 15, 1937 |

# Book Review Department

## Urban Land

Bodfish, Morton, and Theobald, A. D. Savings and Loan Principles. *New York: Prentice-Hall, Inc., 1938. pp. xvii, 715. $4.*

The title of this book is not truly descriptive of its content. It covers the history of the building and loan association in America, a description of the internal organization and activities of the association, a critical historical analysis of the legislation providing for the association and the state supervision thereof, an exposition of the system of finance of which it is a part, and the principles and policies employed in relation to savers, home owners, competitors, the state, and the public at large. In short, it does not restrict itself to "principles"; on the other hand, it limits itself to the building and loan scheme of "savings and loan." On the lending side, it deals only with home loans, urban home loans.

The book appears at a most opportune time, not only because no recent book of quality has been published in this field, but also because the industry is undergoing a most revolutionary change in scope, organization, theory, and legal authority. The enactments creating the Federal Home Loan Banks, together with the "New Deal" Home Owners' Loan Corporation, Federal Housing Administration, and other instrumentalities dealing with the financing of homes, have suddenly transformed the conception of the role that the building and loan association is to play in our economic and financial life. There is high need of an up-to-date interpretation of this new character to serve as a guide to the operations of the system and to the legislators who give legal condition to it.

Probably no two persons in America can be found who are more intimate and informed as regards the building and loan industry than the authors of this book. As directing officers of the United States Building and Loan League for many years, during which the Federal Home Loan Bank System and the "New Deal" institutions were founded and developed, and during which the newer conception of this scheme of finance has been evolved, these authors have played a prominent part in directing, advising, educating, and lobbying—prominent at every state and national convention, in all the journals, and in all promotive activities. They speak with the authority not only of active trade association executives and trained economists, but also of active officers of a rapidly growing and successful savings and loan association that has many millions of dollars of assets.

The book is comprehensive in its treatment of the savings and loan association as a going institution. The authors are leaders and reformers, citing and extolling the most modern and approved practices in lending, attracting savings, managing portfolios, soliciting new business, budgeting, servicing loans, training and directing personnel, etc. Their treatment bespeaks an ardent love of the business, an optimism that is engaging, an appreciation of the great role which thrift and home ownership play in modern society. No building and loan executive can read the book without catching this fever, while he is absorbing the mass of technical information highly useful to him in his everyday business. For the current decade it promises to be the Bible of the trade.

One of the greatest virtues of the book is the care taken by the authors in correlating the development of the building and loan association as an organization and of its principles and practices with the economic development of the country and with the business cycle. They show that it is a creature of the times and of its environment, and are able, therefore, to forecast its probable lines of development.

The adverse criticisms which might be raised are few and inconsequential as compared with the service the book will afford the trade. One wishes that the authors had discussed home loans from the angle of consumer credit; that in Chapter III they had discussed more adequately the philosophy of the exceptional character of building and loan associations as corporations; that on page 101 they had given an organization chart of a smaller association, in order to be more representative and useful; that on page 125 they had stated specifically the character of tax exemption of shares and dividends of federal savings and loan associations; that on page 130 they had shown how the yield on insurance is calculated and why a bigger in-

come is attained through building and loan shares; that in Chapter VI the nature of liquidity were better explained in terms of self-liquidation and of shifting the investment; that on pages 149–50 "policy loans" were mentioned; that on page 172 they had used in their illustration a natural person rather than a corporation as borrower; that in Chapter VII they had referred to the studies of the Federal Home Loan Bank Board as to the actual relative costs of loans under the different lending schemes; that in Chapter VIII they had described the actual methods of handling loans and had discussed the advisability of a policy of low interest and low dividend as against a policy of high interest and high dividend; that Chapter XVII contained some discussion of the construction cycle and not merely a chart of it, and that it also contained a real correlation of construction business to the business cycle; that on page 502 in the comparison of premium rates care had been taken to differentiate the bases of the percentages; and that in general the weaknesses of the structure of the system of thousands of local unit associations were vigorously pointed out and the high desirability of consolidation, if not of a branch system, were emphasized.

RAY B. WESTERFIELD
*Professor of Political Economy,*
*Yale University*

Walker, Mabel L., and others. URBAN BLIGHT AND SLUMS: ECONOMIC AND LEGAL FACTORS IN THEIR ORIGIN, RECLAMATION, AND PREVENTION. *Cambridge: Harvard University Press, 1938. pp. xvi, 442. $4.00.*

This grand book is a fitting capstone to the series of *Harvard City Planning Studies.* If one could say of it that it exploded many current fallacies, one could hope for it a wider audience than it is likely to enlist. It does not explode fallacies; it erodes and undermines them by patient analysis, careful attention to their possible validity, and guarded conclusion that they are not sound. Its theme is that "economists have been conspicuously lacking in the formulation and carrying out of" comprehensive rehabilitation programs: "Housing enthusiasts and proponents of slum clearance have largely ignored the findings of tax authorities and have sometimes propounded theories and advocated policies that are in direct contravention of generally accepted tax principles" (p. 241).

Of course, one reason why the voice of the urban land economist has not been heard in the clamor about slums is that we have almost no urban land economists. Harold Buttenheim and Lawson Purdy, the sponsors of the volume, state that their "first task was to find a student of urban economics and sociology competent to direct the work." They made no mistake in selecting Dr. Walker and her collaborators, who include the late Henry Wright, Ira S. Robbins, counsel to the New York State Board of Housing, Albert C. Shire, Technical Director of the USHA, and Richard U. Ratcliff, formerly of the FHA.

The richness of this book is hard to picture in a short review. The first section, Statement of the Problem, ends with a list of the key points of an effective rehabilitation program: physical planning, governmental regulations, taxation, financing and economics, execution of the projects, management, selling the idea to the people, rationalization of the home-building industry. Here is no panacea, no cure-all, but a sober picture of the many elements of the problem. Each of these points is treated in the book, some in more detail than others.

Special emphasis is given to the Deflation of Fictitious Property Values (pp. 109–71); to the problems of Land Assembly, by Mr. Robbins (pp. 172–240); to the Relation of Taxation to the Problem of Blighted Areas (pp. 241–89). These sections seem to me the most valuable fresh contribution in the book. Mr. Robbins' patient analysis should dispose forever of a number of proposals for rehabilitation by voluntary cooperative effort which have been agitated before housing meetings for years. I wish that Dr. Walker were not a voice crying in the wilderness in her summary of the "consensus among economists" concerning the shifting and incidence of the property tax.

This volume takes its place as the indispensable general discussion of the economic and legal problems of the slums. Its only serious deficiency is the lack of an index.

CHARLES S. ASCHER
*Social Science Research Council*

Davenport, Donald H. THE COOPERATIVE BANKS OF MASSACHUSETTS. *Boston: Bureau of Business Research, Harvard University, 1938. pp. x, 53. $1.00.*

This study describes the organization and financial structure of the Massachusetts co-

operative banks and their services to their investing and borrowing members, tracing their financial history from their beginnings in 1852 down through 1937. The fundamental strength of the cooperative banks through several depression periods is pointed out. A statistical analysis is presented of the important asset and capital items of the combined balance sheets of the banks and of the principal income and expense items on their combined operating statements. The functions of the Cooperative Central Bank and the banks' share-insurance fund are briefly mentioned.

A rather provincial attitude is taken in the study through the criticism of federal savings and loan associations which have the same relation to cooperative banks as national banks have to state-chartered commercial banks and trust companies. The author makes the assertion that the accumulation of savings in cooperative banks should be principally restricted to systematic installment savings accounts rather than permitting these institutions likewise to serve that portion of the population which cannot save on a regular preconceived plan because of their irregularity of income or employment. Obviously, the banks can be of service to citizens with irregular incomes just as well as they can to that segment of the population which has a steady income, and the banks can in turn lend to a home owner funds which were received in a lump-sum investment as safely as they can any funds accumulated by regular installment savings.

The author recommends that steps be taken to strengthen the share-insurance fund which was created to protect investors in cooperative banks. Unless Massachusetts is willing to make a large contribution to the capital of such a fund, it is doubtful that this state fund can be made nearly as strong or as desirable to investors as the insurance of accounts provided by the Federal Savings and Loan Insurance Corporation which has a large capital stock contributed by the Federal Government. The author praises the cooperative central bank and by implication condemns the Federal Home Loan Bank System which performs a similar service nationally for these savings institutions in all states. In view of the fact that the Federal Home Loan Bank System has tremendously greater resources than the cooperative central bank, it would seem desirable that all cooperative banks belong to the Federal Home Loan Bank System as many already do or that the central bank itself become a member of the regional Federal Home Loan Bank serving Massachusetts.

FRED T. GREENE
*President, Federal Home Loan Bank of Indianapolis*

Bodfish, Morton, editor. 1938 BUILDING AND LOAN ANNALS. *Chicago: United States Building and Loan League, 1938. pp. xi, 851. $5.00.*

Fifty-six men are authors of articles in this ninth of the series of savings and loan association yearbooks. In addition to them, some 500 executives of home-financing institutions have collaborated in the preparation of committee reports which constitute a fifth of the entire volume. Besides, the 1938 *Annals* contains the principal addresses by American delegates to the International Congress of Building Societies held in 1938 in Zurich. The result is a consensus regarding the current situation in the industry and the things to be done about mortgage finance.

No previous yearbook has shown so clear a tendency among the authors to scrutinize critically every custom and accepted policy, not in the spirit of revolutionizing for the sake of newness but in finding a possibly better way to do the job as far as all are concerned. A greater portion of this than of previous volumes is devoted to public housing and mortgage legislation. These subjects receive almost as much attention as the two lines of major concern—namely, getting savings and making home loans, for which activities the book is intended as a guide.

As usual the volume contains the current statistics of the savings and loan business. The data on savings and loan assets, mortgage loans made, etc., are presented by states and in total and show the current status, as well as the trends, in these indices of savings and loan development.

HELEN C. MONCHOW
*Of the Journal Staff*

## Land Resources

Hooker, Elizabeth R. READJUSTMENTS OF AGRICULTURAL TENURE IN IRELAND. *Chapel Hill: University of North Carolina Press, 1938. pp. viii, 245. $4.00.*

Irish land-tenure problems have probably attracted more attention and are more fa-

miliar to economists generally than are those of any other country. Innumerable books have dealt with this subject. Yet this very preponderance of available information has clouded the issues involved and the great emotionality which has characterized many of the discussions has made the acquisition of facts very difficult.

The transformation of tenants into farm owners was but one of five different programs which have been undertaken in Ireland for the solution of the "land question." This phase of the tenure-reform program has been widely publicized and has been accepted by many as evidence that the only solution to tenure problems is a change in the status of farm operators from tenants to owners. In this terse historic-analytic presentation of the Irish land-tenure-reform program, Miss Hooker has pointed out many conditions and circumstances which have been generally accepted as definitive facts and has shown that they are really the symptoms and results of underlying defects and abuses of the tenure laws and practices. The elucidation of the factors which promulgated the farm-ownership phase of the Irish program is one such outstanding contribution which is made to the understanding of Irish tenure problems.

Another important point, brought out in this book, is the fact that as the farm-ownership program developed, it was found that farm ownership alone was insufficient to meet the land-tenure problems in all sections of Ireland. Consequently, additional programs had to be developed, but because they were not part of a single concerted policy, divergencies inevitably arose between these programs and in some cases outright contradictions developed. Altogether five separate and distinct programs were developed. Miss Hooker has designated these programs as: (1) regulation of landlord and tenant relations, (2) transformation of tenants into owners, (3) development of the congested districts, (4) provision of farms for landless men, and (5) aid to rural laborers.

The last three programs were developed supplementally in connection with the farm-ownership program to cope with the special problems as indicated. The regulation of landlord and tenant relationships, though gradually supplanted by the farm-ownership program, played an important part in the whole reform program. It was, first of all, based on Irish ideas of tenure—the traditional Three F's, fair rent, freedom of sale, and fixity of tenure (the desire for ownership being aroused through propaganda conducted by political agitators working for the political independence of Ireland). However, it was not waste motion since it helped prepare for the general sale of farms to tenants, and in the meantime it greatly improved tenure conditions while the process of transferring tenants into owners was being accomplished.

The home-ownership program was, of course, the one upon which the largest amount of effort, time, and money was expended. In the course of nearly 70 years, the objective proposed for land-purchase operations broadened from the creation of a limited number of small farm proprietors to the transformation of the entire body of occupiers into owners. At first, this was done only so far as was possible through voluntary sale and purchase operations, but finally brought to completion by compulsory measures. The terms upon which tenants were enabled to purchase their holdings became more and more liberal as the program developed. At the beginning, the loans made covered only 2/3 or in some cases 3/4 of the purchase price, but were finally enlarged to make possible the borrowing of the entire purchase price. The sale price, based upon the annual rental value of the farm, was reduced over the course of this period from approximately 23 times to about 14 times the former rent. Moreover, what began as a series of loans on a strictly business basis, with adequate safeguards for repayment, became more and more a government investment in public security from which full financial repayment was not expected. The total amount of money loaned to purchasers during this period was about 3/4 of a billion dollars, and represented more than 98% of the purchase price of the farms.

On these progressively favorable terms, Ireland was gradually transformed from an island of farm tenants to one in which farm owner-occupancy was nearly universal. Whereas in 1870 tenants constituted 97% of the farm occupiers, today tenants operate less than 3% of the agricultural land. More than 90% of the agricultural land in Northern Ireland and about 94% in the Irish Free State were transferred from tenant to owner operation through the farm-ownership program.

Although sufficient time has not elapsed

for final evaluation of the various programs, it seems evident that they are proving to be highly successful, even though the Irish farmer was traditionally a tenant with little desire to own the land which he operated. Their economic, social, and educational status has quite evidently been markedly improved.

This account of the Irish tenure-reform program is an indispensable addition to the libraries of those who would be well informed on such problems and who need such information close at hand. It will prove to be of value in answering pertinent questions that will arise as we continue to develop our own tenure-reform programs.

DOUGLAS F. SCHEPMOES
*Bureau of Agricultural Economics,*
*United States Department*
*of Agriculture*

## Public Utilities

Stocker, H. E. MOTOR TRAFFIC MANAGEMENT. *New York: Prentice-Hall, Inc., 1938. pp. xxiv, 412. $5.*

The title of this volume would lead the reader to believe that passenger transportation by motor bus as well as freight transportation by truck would be covered. This is not the case. The volume is confined to a consideration of freight transportation.

Phases of this subject which it is believed the author has presented in a comprehensive, clear manner are:

(1) The history and development of regulation prior to the Motor Carrier Act of 1935, and the principles and provisions of that Act;
(2) The mechanics and underlying principles involved in the construction of freight rates, including separate consideration of commodity rates, exceptions to class rates, and class rates;
(3) Various miscellaneous rules and regulations covering minimum charges, demurrage, collections, special deliveries, etc.;
(4) Instruction in the compilation of a motor tariff;
(5) Instruction in the use of a motor tariff;
(6) Forms and documents necessary for the shipper and the company to effect the movement of freight.

The text material dealing with the comparative service advantages and economics of motor and railroad transportation brings together in concise form much interesting factual data published elsewhere in support of conclusions generally known to those familiar with the industry.

The chapters on Organization and Management and on Selling Transportation Service undoubtedly give a better understanding of motor truck management to undergraduates, but these chapters do not focus on the heart of the management problem in the trucking business.

In an industry which has shown a meager return—if any—upon its investment, the primary problem today is believed to be an expense and accounting control which will ascertain costs and permit the adjustment of service so as to favor profitable traffic and discourage unprofitable traffic. The whole area of expense control, as may be indicated by the preparation and application of standard truck-mile and ton-mile costs to particular routes and shipments to determine possible profit margins, receives no consideration.

The volume could more properly be called "Motor Freight Regulation, Tariffs and Standard Forms." Within this field, it is comprehensive and invaluable. For this information alone, the book could justifiably be rated a "must" book for all who are earning their livelihood in the trucking business, or who desire to obtain a proper understanding of the technical foundation upon which highway transportation revenues are computed, and the shipping transaction effected.

HENRY P. BRUNER
*Management Engineer,*
*Chicago, Illinois*

Locklin, D. Philip. ECONOMICS OF TRANSPORTATION. *Chicago: Business Publications, Inc., 1938. pp. x, 863. $4.*

In the formation of any opinion as to the merit of such a work, it is essential to know the place which the book is intended to fill in the works which deal with this subject. Here is a book of eight hundred odd pages, which purports to consider most of the ramifications and intricacies of the very involved subject matter of the economics of transportation. Eight hundred pages will not suffice. Consequently and necessarily, for one who needs a discussion of these questions, etched out with fineness and completeness of

detail, the book is inadequate and does not compare favorably with the exacting and much more searching reporting and analysis done in the work of Mr. Sharfman. This does not mean that the work is not worthy or may not well fulfill the function of a work intended, within limited scope, to treat things with a broader brush. In this field which involves highly controversial questions, where those who are less familiar with the subjects are most certain of their views, and where what is authoritative must, at least in many instances, abide the verdict of time, this work evidences industry, thoroughness, and that objective-mindedness essential to honesty of view. Within the limitations stated, the work is very useful and will well meet the need for such a form of treatise.

LESLIE CRAVEN
*Miller, Owen, Otis & Bailly,*
*New York City*

Grant, Eugene L. PRINCIPLES OF ENGINEERING ECONOMY. Revised Edition. *New York: Ronald Press, 1938. pp. xix, 431. $3.75.* (With supplement, PROBLEMS, pp. iii, 142, $4.25; Supplement separately, $1.00.)

Harding, C. Francis, and Canfield, Donald T. BUSINESS ADMINISTRATION FOR ENGINEERS. *New York: McGraw-Hill Book Co., 1937. pp. xiv, 637. $5.00.*

These two works deal with the business aspects of engineering, and devote considerable attention to public utilities as engineering businesses.

The book by Professor Grant, who is associate professor of economics of engineering at Stanford University, is a new and enlarged edition of a work first published in 1930, and reviewed in this *Journal* in August, 1932 (p. 335). It is a painstaking and detailed exposition of methods whereby rational decisions can be reached concerning the practical advisability of specific engineering projects. It is larger than the first edition by 49 pages, the new material including somewhat fuller discussion of public projects and of social objectives. The author's entry upon this larger domain is restricted and cautious, however; he recognizes its controversial character and the limitations of space.

Public utilities are dealt with along with other businesses; here, too, the author keeps closely to his path.

The book, together with its 142-page supplement of problems, is valuable to practical engineers, executives, and students. It holds to orthodox concepts of the various elements upon which comparative economy studies are based; it insists on interest as an indispensable factor—but of vague limits; broad social and economic theories of capital versus consumption goods, and of utilization of idle human resources, are left for others to deal with.

The second book, by the head of the electrical engineering department and an associate professor of electrical engineering, respectively, at Purdue University, represents a praiseworthy effort to instruct engineers and engineering students in the principles and procedures of business administration. It discusses in considerable detail business organization, property valuation, corporate financing and accounting, and return on capital. A large amount of space is devoted to public utilities, both in connection with the topics just mentioned and in a special section which goes into public regulation and ownership, utility accounting and economy, and rate-making. As to the last subject, it is to be regretted that the discussion is not more clear-cut and up-to-date. The Indianapolis Water Company decision of the United States Supreme Court in 1926 is referred to as a "most recent" authority (p. 230) in connection with reproduction cost, although Mr. Justice Butler, author of the Court's opinion, called attention in 1933 to the Court's departure from the doctrines of that case in the Los Angeles Gas decision—a departure still more strongly marked today. The treatment of depreciation, going value, etc., likewise reflects the vagaries of legal decisions rather than the clarity which an engineering discussion should have.

H. M. OLMSTED
*Consulting Engineer,*
*Illinois Commerce Commission*

## Miscellaneous

DEBTS AND RECOVERY. *New York: Twentieth Century Fund, 1938. pp. xxv, 366. $2.75.*

This is an outstanding statistical publication concerning the internal debt of the

United States. The debt structure of the Nation and its changes from 1929 to 1937 are carefully scrutinized. This statistical survey covers the credit institutions, building and loan associations, mutual savings banks, life insurance companies, mortgage companies, federal credit agencies, the debts of individuals and unincorporated firms (including debts of farmers and home owners), the debts of corporations (particularly of railway and utility companies), and shifts in government debts. In short, it is a story of some 250 billion dollars of American debt since the depression. The pages devoted to the farm mortgage debt (9.5 billion dollars in 1928 and about 7.7 billion dollars at the beginning of 1935) and to the home mortgage debt (14 billion dollars in 1925 and about 18 billion dollars in 1936), with all the implications and governmental aid, present considerable interest. Only 34.5% of all farms were mortgaged at the beginning of 1935. About 1/2 of the 23 million non-farm homes in the United States are mortgaged.

After a careful statistical survey presented by A. G. Hart, the committee, under the chairmanship of J. Lionberger Davis, made a series of important recommendations. The committee is convinced that many of the fundamental weaknesses of our economic order spring from the character of our debt structure. Our economic system would be far more healthy if debt financing were used less frequently.

To my mind the committee is perfectly right—and, I should add, is supported by European evidence—in pointing out that it is unhealthy for too much of the nation's savings to be diverted from investment in "equities," which have no fixed interest and repayment provisions; i.e., from direct ownership of real estate and from partnership or common-stock ownership in business.

This unhealthy situation is aggravated by various legal restrictions (eligible investments for insurance companies) and particularly by government policies which favor debt financing instead of direct investment in trade and industry. In this respect recent increase in the taxation of dividends and of corporations is to a great extent responsible for the decrease of investments in stocks. The regulation of utility rates also favors the issuance of bonds instead of stocks, since the fairness of rates is judged by the "fairness" of the return and the rate of return considered "fair" is invariably higher than the prevailing yield on bonds. Also there is no proper justification for much local borrowing which is done simply because the local tax machinery does not function properly.

The committee favors simplification of mortgage contracts and the reform of foreclosure procedure. At the same time, it advocates the eventual liquidation of the "temporary" federal credit agencies, in particular of the RFC, the HOLC, and of some of the Farm Credit Administration agencies. The advisability of a much broader reform of the American banking system is not mentioned, however. Nevertheless, it is surprising that the dangers of increased government borrowing are not stressed sufficiently, although there is a faint statement to this effect: "It is still possible that the expansion of government debt itself may be preventing investment from taking other forms, and thus be perpetuating the emergency it is aimed to cure."

PAUL HAENSEL
*Northwestern University*

King, Willford I. THE CAUSES OF ECONOMIC FLUCTUATIONS. *New York: Ronald Press Co., 1938. pp. xv, 353. $3.50.*

In the midst of the current battle of nostrums, panaceas, and plans which are sprouting overnight, it is a pleasure to find Dr. King's thoughtful book on the nature and causes of depressions. This is a popular book, suitable for the general reader. Students of the business cycle and probably general students of economics will find little new and will likely feel that Dr. King has been guilty of some oversimplification. The general reader, interested not in the advocacy of some plan but seeking guidance among conflicting theories and confusing evidence, will find a general description and history of business depressions, a thoughtful criticism of common theories as to what causes depressions, an analysis of attacks which have been made on depressions by this government and other agencies, and Professor King's explanation, as a result of his long study and interest in the problem, of the causes of depression and his vote for suggestions for correction.

At some risk of committing an oversimplification of Professor King's book, his thesis as to why depressions occur may be summarized as follows:

Fundamentally, booms are caused by the spread of "contagious optimism." Booms are able to reach great heights because of the existence of a "freely expansible credit system." Eventually the "contagious optimism" ends and the boom collapses. The depression resulting is perpetuated by price and wage rigidities. Dr. King places considerable emphasis on the theory that sun-spot cycles are correlated with and have a direct action on public optimism and pessimism. This theory is offered as the deus ex machina in the spread and collapse of the "contagious optimism."

That part of the book already discussed should, in the reviewer's opinion, be highly "socially desirable" in helping to clear away misunderstandings which are so current as to the why and wherefore of good and bad business. He is not so sure about Professor King's chapters on the business cycle and forecasting. Sometimes he feels that the less said about cycles in business the better. In particular, the material on sine waves seems out of place. Whether business fluctuations can be expressed properly as compounded sine waves is a purely technical matter, and in the reviewer's opinion largely formal—a matter of mathematical convenience. The general tenor of these two chapters can easily create an oversimplified state of mind on the part of the reader.

Dr. King closes his book with his analysis of an essentially sound program for combating depressions and an exposition of proposals advanced by him, and others, for attaining these objectives. In brief summary, he finds that to help control depressions, programs leading to the following results will be beneficial:

(a) Increased margins not only for stock purchases but for real estate, automobiles, etc.
(b) Requirement of 100% bank reserves against deposits.
(c) Stabilization of prices by the government.
(d) Stabilization of employment.

HORACE A. SECRIST

*Director of Research,*
*Kendall Mills,*
*Walpole, Massachusetts*

McLaughlin, Glenn E. GROWTH OF AMERICAN MANUFACTURING AREAS. *Pittsburgh: Bureau of Business Research, University of Pittsburgh, 1938. pp. xxvii, 358. $3.00.*

Those interested in causes and effects of movements in American industry since the Civil War should find this book very stimulating. The stated purpose of the study is to measure and analyze economic growth of the more important industrial areas of the nation, especially the Pittsburgh district. Areas selected for the report are those defined by the United States Bureau of the Census in 1929. The facts employed are census figures on total population and workers gainfully employed as rough measures of industrial activity, and average number of wage earners and value added by manufacture as determinants of manufacturing activity.

To wishful thinkers who can perceive a partial solution to many modern problems in "decentralization" of industry, Professor McLaughlin offers little hope. Although he admits that manufacturing has shown some tendency to move from large cities to smaller ones or even into rural areas, there seems to be considerable doubt that such movements have any real magnitude or importance. He points out, however, that because of scarcity of suitable industrial sites in many large cities a number of plants have been forced to locate in suburban areas. Any additional decentralization of industry which may have occurred, he contends, has involved movements from one major manufacturing area to another instead of a general spread into the hinterland. On the other hand, developments in the steel, automotive, and airplane industries during recent years appear to have been characterized by an increased concentration in certain manufacturing areas rather than in decentralization.

The westward expansion of industry as a whole from the Atlantic seaboard, the author asserts, has represented not so much a migration of industrial plants, as the establishment of entirely new manufacturing units, which in turn have contributed to subsequent expansion of markets for manufacturers in the older regions.

Professor McLaughlin has been very painstaking in the organization and analysis of his factual material and most careful in drawing his interpretations and conclusions.

JAMES J. HANKS

*Administrative Assistant, Department of Commerce, State of Wisconsin*

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Economic Criteria for Classifying Nonurban Land According to Probable Best Use ..... *David Weeks* and *H. R. Josephson*

Germany's Bid for Self Sufficiency ..... *Benjamin Higgins*

Evolution of a Plan for Intra-Association Shifting of the Capital Obligation Among Members .. *H. E. Erdman* and *Weston W. Taylor*

Status of Agricultural Trade Unions in Holland ..... *Sidney C. Sufrin*

Economic Aspects of Hybrid Corn .... *A. A. Dowell* and *O. B. Jesness*


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*Secretary*, ASHER HOBSON

University of Wisconsin — Madison, Wisconsin